July 1959
JPH
VOLUME 49 NUMBER 7

AMERICAN

Journal of Public Health

AND THE
NATION'S HEALTH

GOOD LABORATORY TECHNIQUE BEGINS WITH QUALITY LABORATORY PRODUCTS

Quality is an intangible added value difficult to measure; laboratories using Baltimore Biological Laboratory products for diagnostic procedures, specialized examinations and research studies, can be sure only the best bear the BBL label.

B-B-L CULTURE MEDIA

- Dehydrated
- Prepared in Bottles and Tubes
- Peptones, Hydrolysates and Other Ingredients

B-B-L MICROBIAL SENSITIVITY TESTING ITEMS

- SENSI-DISC antimicrobial disc...in a complete line of antibiotic and other agents
- Automatic SENSI-DISC DISPENSER ...uniformly places from 1 to 8 discs, in the combination you select, on a standard Petri plate
- TAXOS identification discs, including carbohydrate discs, for rapid microbiological differentiation and identification
- Lowenstein-Jensen Medium with inhibitors for *M. tuberculosis* sensitivity tests.

B-B-L MISCELLANEOUS CHEMICALS

- Stains, Indicators, Carbohydrates for Fermentation Studies

B-B-L LABORATORY APPARATUS

- Brewer Automatic Pipetting Machines • Brewer Anaerobic Jars • Brewer Anaerobic Petri Dish Covers • Petri Dish Boxes • Tube Cabinets • Display Racks • Slide-staining Racks • Tube Rotators

CAPPEL PRODUCTS

- **Animal Blood Products** • Washed, Pooled Cell Suspensions • Sterile Blood and Sera • **Tissue Culture Media** • **Diagnostic Reagents** for • Serodiagnosis of Syphilis • Davidsohn Differential Test • Streptolysin "O" Titrations • Prothrombin-Time Determination • Hanger Flocculation Test • Testing of Blood—Antisera and Grouping Sera

The B-B-L Catalogue and additional information sent upon request. (6)

B-B-L **BALTIMORE BIOLOGICAL LABORATORY, INC., BALTIMORE 18, MARYLAND**
A DIVISION OF BECTON, DICKINSON AND COMPANY

B-B-L, SENSI-DISC, XILIT, TAXOS AND CAPPEL ARE TRADEMARKS. 70989

Official Monthly Publication of the American Public Health Association, Inc.

AMERICAN
Journal of Public Health
AND THE NATION'S HEALTH

CONTENTS • JULY 1959
VOL. 49, NO. 7

Articles PAGE

A Laboratory Analysis of the 1957-1958 Influenza Outbreak in New York City. II. A Seroepidemiological Study 847
DANIEL WIDELOCK, Ph.D.; SARAH KLEIN, M.P.H.; OLGA SIMONOVIC; and LENORE R. PEIZER

Challenge of Communicable Disease Today:

Nursing Opportunities 857
MARY R. LESTER, R.N., M.P.H.

Tuberculosis Control 862
M. ESTELLE HUNT, R.N., M.P.H.

Venereal Disease Control 865
E. ALICE CLARK, R.N., M.A.

Virological Epidemiology of the 1958 Epidemic of Kyasanur Forest Disease . 869
TELFORD H. WORK, M.D., M.P.H.; F. R. RODERIGUEZ, M.B.B.S.; and P. N. BHATT, M.P.H.

The Measurement of Voluntary Health Insurance Coverage in the United States 875
DAVID ROBBINS, M.P.H.

Suicide and Public Health—An Attempt at Reconceptualization 881
GUIDO M. CROCETTI, Ph.D.

Some Clinical Considerations in the Prevention of Suicide Based on a Study of 134 Successful Suicides 888
ELI ROBINS, M.D.; GEORGE E. MURPHY, M.D.; ROBERT H. WILKINSON, JR., M.D.; SEYMOUR GASSNER, M.D.; and JACK KAYES, M.D.

Continued on page iv

Eighty-Seventh Annual Meeting

American Public Health Association

Atlantic City, N. J., October 19–23, 1959

Articles, continued

PAGE

Twenty Years of Coping with Ionizing Radiation at the Local Health Department Level 900
WILLIAM G. FREDRICK, Sc.D.

The Ultraviolet Irradiation of Biological Fluids in Thin-Flowing Films . . . 903
FRANZ OPPENHEIMER, Ph.D.; EGON BENESI, M.E.; and ALTON T. TAYLOR, Ph.D.

An Outbreak of Gonorrhea in Massachusetts—1957 924
NICHOLAS J. FIUMARA, M.D., M.P.H.; BARNARD P. TODD, M.D.; HAZEL D. YOUNG, R.N.; and JANET G. WILSON, R.N.

How to Achieve More Effective Use of Professional Staff Time—A Program Director's Guide 937
HARVEY L. SHAPIRO, M.A., M.P.H.

Journal Departments

EDITORIALS:

Hospitals and Public Health 944

Repeated Poisonous Snakebites in Man 946

Letter to the Editor 947
Re: Air Sampling and Other Control Techniques in Study of Hospital Staphylococcal Infection.
HERBERT M. DECKER, M.S.; ROBERT K. HOFFMAN, M.S.; and A. G. WEDUM, M.D.

Association News 949
Another Behavioral Science Study. School Health Section Publishes Reports. Who Are Public Health Students? Hotel and Motel Rates and Reservation Form.

News of Affiliated Societies and Branches 953

Employment Service 959

Book Reviews 963

Books Received 971

A Selected Public Health Bibliography with Annotations 973
RAYMOND S. PATTERSON, Ph.D.

Credit Lines 977

News from the Field 982

Conferences and Dates 991

The American Journal of Public Health and the Nation's Health is published by the American Public Health Association, Inc., at 883 Broadway, Albany 1, N. Y. Executive office 1790 Broadway, New York 19, N. Y. Subscription price $12.00 per year for United States, elsewhere $13.00 to cover postage and handling. Single copies $1.25 postpaid. Entered as second-class matter at the Post Office at Albany, N. Y., September 17, 1932, under the Act of March 3, 1879. Published monthly. Copyright 1959, by the American Public Health Association, Inc. The American Journal of Public Health is indexed in the Industrial Arts Index and, in part, in the Quarterly Cumulative Index Medicus, Biological Abstracts, Chemical Abstracts, Engineering Index, and Public Affairs Information Service.

Address all correspondence to the Managing Editor, 1790 Broadway, New York 19, N. Y.

FROM MARKED IMPROVEMENT

to COMPLETE CONTROL

of GRAND MAL SEIZURES

with

"MYSOLINE"®

wide margin of safety

CLINICAL EVALUATION OF 486 EPILEPTIC PATIENTS* SHOWED THAT:

In patients who had received no previous anticonvulsant medication,
"Mysoline" therapy alone provided marked improvement to complete control of major motor attacks in the majority of patients.

In patients only partially controlled with maximum dosages of other anticonvulsants,
the addition of "Mysoline" therapy was followed by marked improvement to complete control of grand mal attacks in 39% of the patients.

In patients refractory to maximum dosages of other anticonvulsants,
"Mysoline" employed alone provided marked improvement to complete control of major motor attacks in 34% of the patients.

In 39 patients with mixed seizures,
"Mysoline" provided improvement to marked control in 49% of the patients.

The dramatic results obtained with "Mysoline" advocate its use as first choice of effective and safe therapy in the control of grand mal and psychomotor attacks.

Supplied: 0.25 Gm. scored tablets, bottles of 100 and 1,000.

Literature on request.

*Livingston, S., and Petersen, D.: New England J. Med. 254:327 (Feb. 16) 1956.

3933

Ayerst

AYERST LABORATORIES

New York 16, N. Y. Montreal, Canada

"Mysoline" is available in the United States by arrangement with Imperial Chemical Industries, Ltd.

POWERS

for... COMPLETE CASE FINDING SERVICE

For more than 25 years Powers has been relieving TB case-finding projects of *all* technical problems. Our technicians work to your schedule with units that can handle as many as 200 chest x-rays per hour. We deliver fully processed x-rays, with a viewer, to sponsor's roentgenologist. Long experience and large volume make Powers X-ray Service both economical and efficient.

Available in either full size roll paper method or 70 mm photofluorographic method. Write before you plan a TB case finding project.

and... ECONOMICAL X-RAY PAPER

You can have high quality radiographs at less than half the usual cost with Powers X-ray Paper. Used by leading hospitals for over 16 years. Powers X-ray Paper is available in standard sheet sizes, or perforated rolls for use with the Powers Magazine Cassette. Write for complete information.

POWERS X-RAY PRODUCTS, INC.

Group Radiography

Glen Cove, Long Island, N.Y.

INDEX TO ADVERTISERS

	Page
American Public Health Association:	
Book Service	XXX, XXXI
Governing Council	XXVI, XXVII
Membership Application Blank.	XXXI
American Bottlers of Carbonated Beverages	XVIII
Ayerst Laboratories	V
Baltimore Biological Laboratory, Inc.	II
Coca-Cola	XXXII
Difco Laboratories	Back Cover
Directory of Industrial Exhibits	XXVIII, XXIX
Directory of Health Service	XXV
Black & Veatch	
The Dickman Laboratories	
Roy B. Everson	
Newing Laboratories, Inc.	
Emerson Venable, P. E.	
Professional Examination Service, APHA	
Eaton Laboratories	VII
Head, R. W., Container Co.	XXV
Kimble Glass Company	XIV, XV
LaMotte Chemical Products Co.	992
Lehn & Fink Products Corporation.	XXXIII
Lilly, Eli, & Co.	XVI
Merck Sharp & Dohme (Decadron).	XIX
Merck Sharp & Dohme (Tetravax).	X, XI
Oval Wood Dish Corp.	XXV
Pfizer Laboratories, Division, Chas. Pfizer & Co., Inc. (Viocin)	XVII
Pfizer Laboratories, Division, Chas. Pfizer & Co., Inc. (Diabinese)	XXI
Powers X-Ray Products, Inc.	VI
Reed & Carnrick	XXII
Ross Laboratories	XII
Schering Corporation	XIII
Sterwin Chemicals Inc.	XX
Upjohn Company, The	IX
Wallace & Tiernan Incorporated	XXIV
Wheat Flour Institute	XXIII
Wyeth, Inc.	VIII

in vaginitis

IMPROVED

TRICOFURON®

destroys all 3 *principal pathogens*

Whether vaginitis is caused by Trichomonas, Monilia or Hemophilus vaginalis—alone or combined—TRICOFURON IMPROVED swiftly relieves symptoms and malodor, and achieves a truly high percentage of cultural cures, frequently in 1 menstrual cycle. TRICOFURON IMPROVED provides: a *new* specific moniliacide MICOFUR® brand of nifuroxime, the *established* specific trichomonacide FUROXONE® brand of furazolidone and the *combined* actions of both against Hemophilus vaginalis.

1. *Office* insufflation once weekly of the Powder (MICOFUR [*anti*-5-nitro-2-furaldoxime] 0.5% and FUROXONE 0.1% in an acidic water-soluble powder base). **2.** Continued *home* use twice daily, with the Suppositories (MICOFUR 0.375% and FUROXONE 0.25% in a water-miscible base).

℞ NEW BOX OF 24 SUPPOSITORIES WITH APPLICATOR FOR MORE PRACTICAL AND ECONOMICAL THERAPY.

NITROFURANS—a *new* class of antimicrobials—neither antibiotics nor sulfonamides.

EATON LABORATORIES, NORWICH, NEW YORK

SINGLE-INJECTION VD THERAPY

Primary and early secondary syphilis:
Injection BICILLIN, 2,400,000 units in single-dose disposable syringe

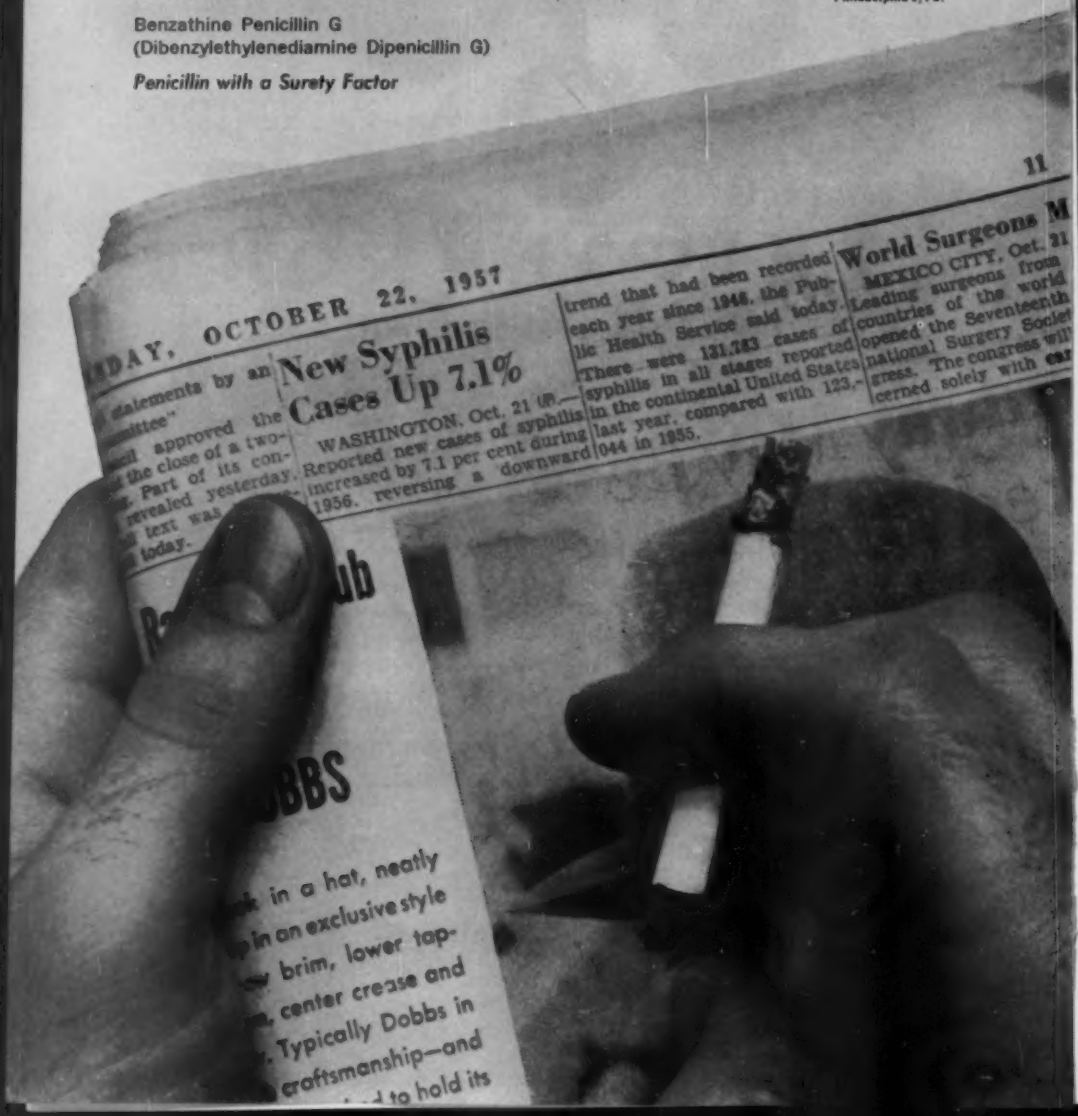
Acute gonorrheal urethritis in the male:
Injection BICILLIN, 300,000 units per cc. in a single dose; vials of 10 cc.

INJECTION
BICILLIN®
LONG-ACTING

Benzathine Penicillin G
(Dibenzylethylenediamine Dipenicillin G)

Penicillin with a Surety Factor

Wyeth
Philadelphia 1, Pa.



Have you considered all the implications of Orinase* in public health? Here, for instance, is what Orinase means to...

The Industrial Physician

According to the Committee on Employment of the American Diabetes Association (Indust. Med. 27:527 [Oct.] 1958), no special difficulty is presented in the employment of "many selected diabetics who are controlled with the aid of tolbutamide (Orinase) and diet. . . . Experience indicates that symptomatic hypoglycemia is not a factor in diabetics controlled with the aid of tolbutamide only." Do your employment standards conform to these new concepts?

The Health Educator

The development of oral management of diabetes represents a breakthrough not only for patient and physician but also for metabolic research. This exciting story makes a natural peg for your efforts to gain community acceptance for the diabetic, and to win support for case-finding projects.

The Public Health Nurse

Nursing time now spent administering insulin to diabetics who cannot inject themselves can be saved if the patient is Orinase-responsive. And of course the patient gains new freedom and self-sufficiency.

The Epidemiologist

The Orinase Epoch has given a twofold push to diabetic case-finding: It has aroused new interest in diabetes, and, because it has reduced the necessity for injections, more and more diabetics are presenting themselves for medical care. This shift in attitude can help you in uncovering more of the unknown diabetics in your community.

The Health Officer

Each such transfer also saves public health dollars. One large city saves some $2.50 a day for each welfare patient switched to Orinase from insulin injections administered by a public health nurse. Why not make sure that your health department doesn't overlook any of the public health implications of Orinase?

Upjohn

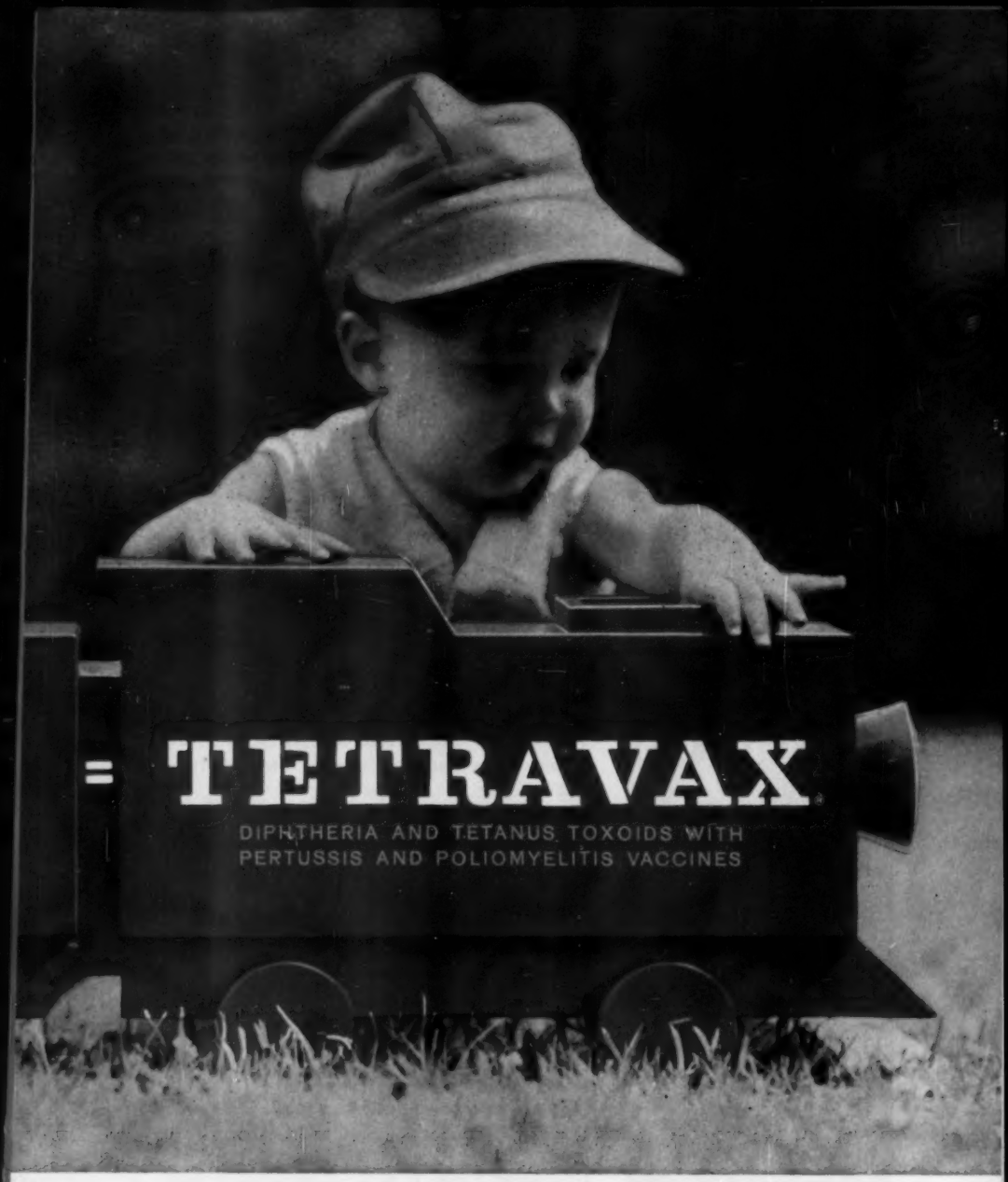
The Upjohn Company
Kalamazoo, Michigan

*TRADEMARK, REG. U. S. PAT. OFF.—TOLBUTAMIDE, UPJOHN

FOR SIMULTANEOUS IMMUNIZATION

against 4 diseases:

Poliomyelitis – Diphtheria – Pertussis – Tetanus



now immunization is possible against more *diseases—with* fewer *injections*

Dosage: 1 cc. *Supplied:* 9 cc. vials in *clear plastic* cartons. Package circular and material in vial can be examined without damaging carton. Expiration date is on vial for checking even if carton is discarded.

MERCK SHARP & DOHME, DIVISION OF MERCK & CO., INC., PHILADELPHIA 1, PA.

TETRAVAX IS A TRADEMARK OF MERCK & CO., INC.

a new study of basic standards in infant feeding

DURATION, CONTINUITY, METHOD

Nitrogen retentions of infants fed breast milk or Similac were compared in the Metabolism Ward of the University Hospital at Iowa City — a homelike yet controlled environment. No solid foods were fed. Three-day balance studies were carried out on each infant approximately every 2 weeks for 6 months.

STANDARDS IN INFANT FEEDING

basis: BREAST MILK

The initial phase of investigation,[1,2] based on the primacy of breast milk as a reference standard in infant feeding,[3] was conducted to provide more detailed and sustained metabolic data than had previously been attempted. The authors derive from these data standard reference curves for nitrogen retention, as found in normal breast-fed infants.

comparison: SIMILAC®

The results with Similac showed progress in growth along normal curves. Nitrogen retentions occurred as with breast milk, in proportions relative to protein intake.[4] By the detailed metabolic criteria of the study, as by the clinical criteria of pediatric practice, Similac stands as a feeding closely comparable to breast milk.

SIMILAC SUPPLIES INFANT'S PROTEIN REQUIREMENT

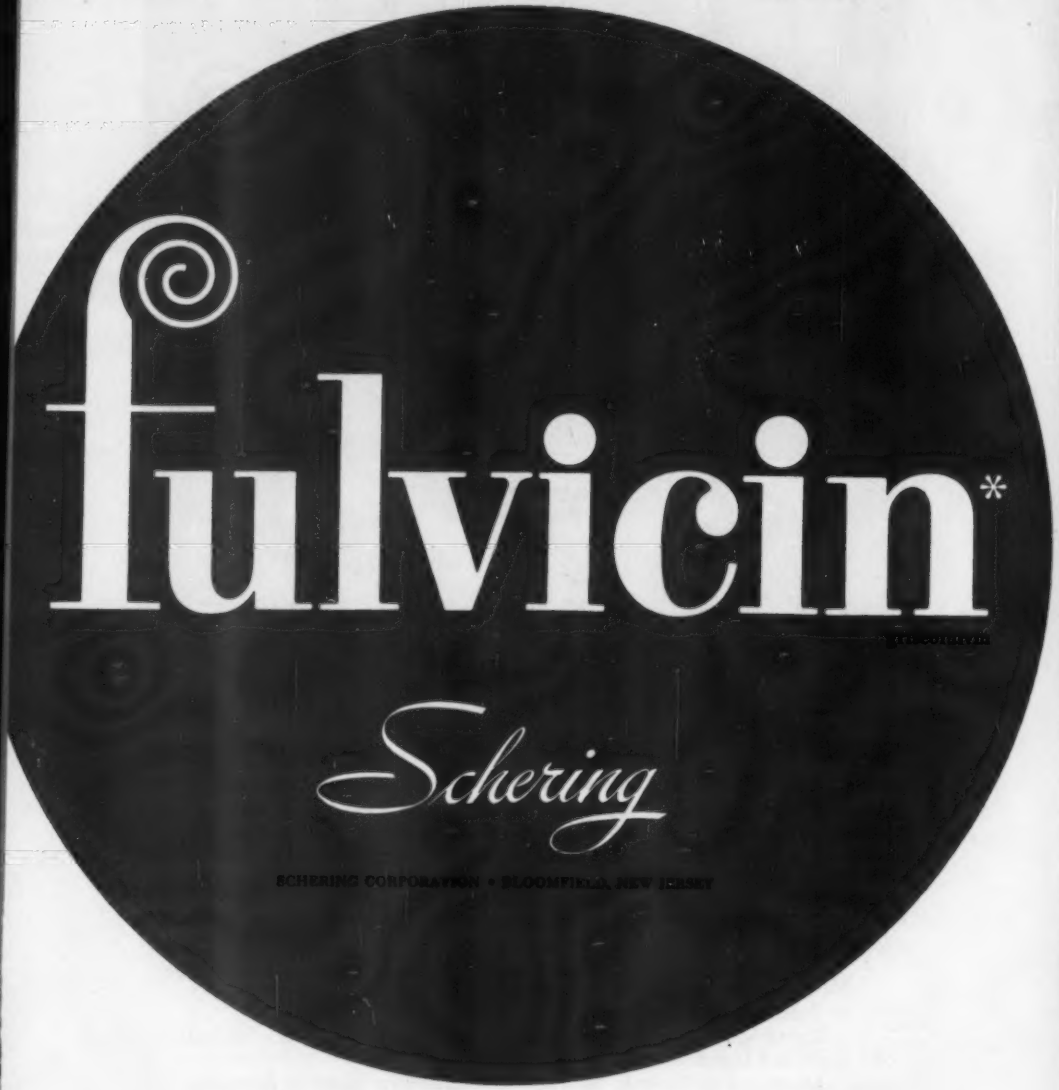
"It is therefore concluded, as judged by these criteria, that the infant's requirement of protein from cow's milk is no greater than that supplied by ad libitum feeding of Formula S."[4]

References: 1. Fomon, S. J., and May, C. D.: Pediatrics *22*:101 (July) 1958. 2. Fomon, S. J.; Thomas, L. N., and May, C. D.: Pediatrics *22*:935 (Nov.) 1958. 3. May, C. D.: Pediatrics *23*:384 (Feb.) 1959. 4. Fomon, S. J., and May, C. D.: Pediatrics *22*:1134 (Dec.) 1958.

RESEARCH · SERVICE · NUTRITION · Ross

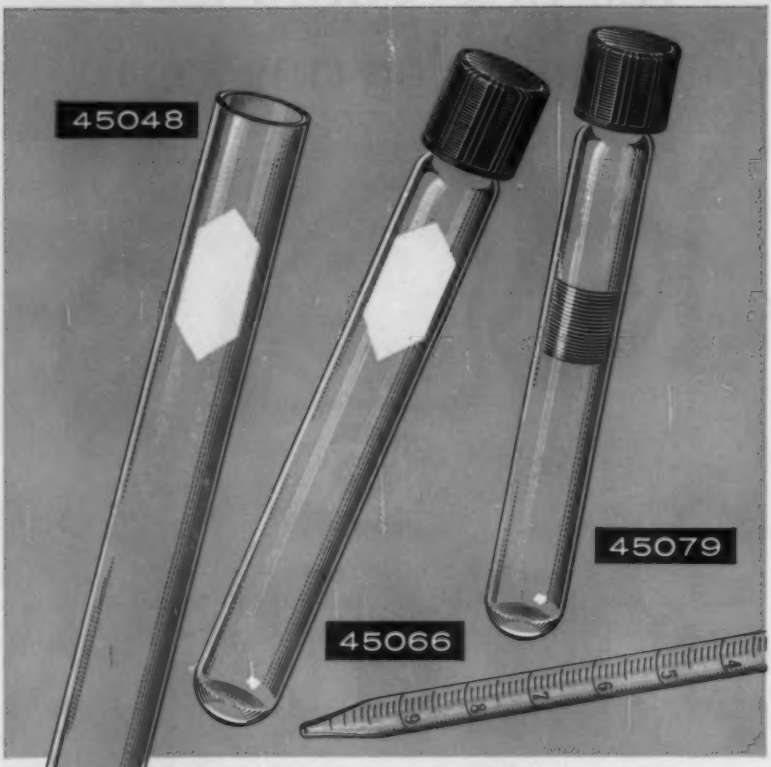
ROSS LABORATORIES, Columbus 16, Ohio

the first *oral* antifungal antibiotic for ringworm



soon available

*T.M. 5-224



KIMAX® ...*The new*

45048

CULTURE TUBE

Made of KG-33 "hard" glass for chemical durability and heat-shock resistance. Flat glazed tops. Large blasted marking area. Sizes from 6 x 50 to 38 x 200 mm.

45066

CULTURE TUBE (Screw cap)

Similar to 45048 but with top finished for screw cap with rubber or Teflon liner. Caps will withstand autoclaving and caps and liners are interchangeable.

45079 to 45084

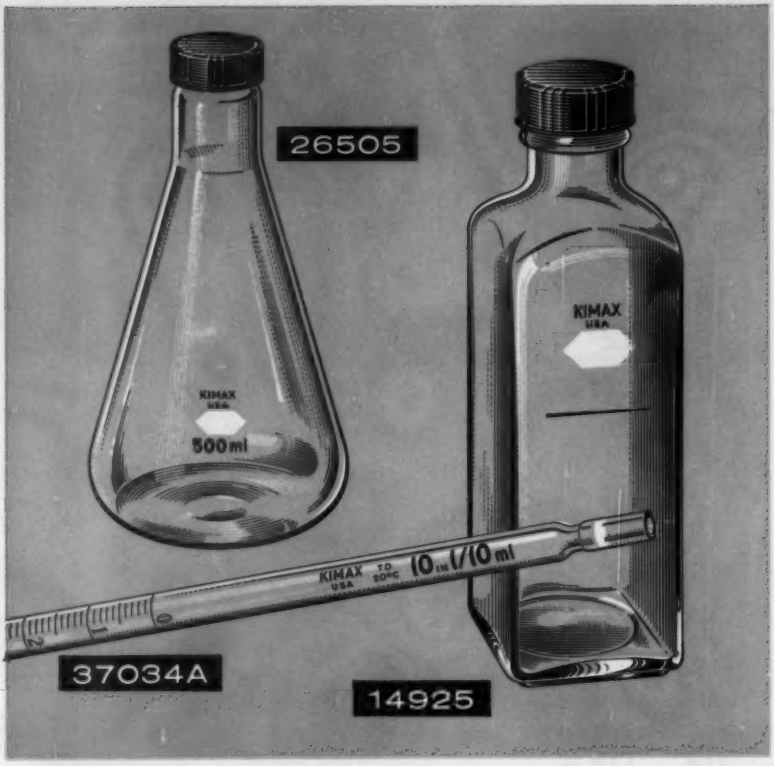
COLOR-CODED TUBES

Similar to 45066 but coded in six colors for quick, convenient identification. Fused-on enamel color patches are durable, withstand washing, sterilizing.

Now, Kimble builds new durability into laboratory glassware, thanks to "hard" borosilicate glass.

KIMAX apparatus is highly resistant to thermal shock, mechanical shock and chemical attack.

Ask your Kimble dealer how you may qualify for quantity discounts. Kimble Glass Company is a subsidiary of Owens-Illinois, Toledo 1, Ohio.



standard of quality in "hard glass"

37034-A

PIPET

Constriction provides secure cotton plug seat. Tops are uniformly flat for better finger control. Tips gauged for accurate delivery. Sizes from 1/10 ml to 10 ml.

26505

ERLENMEYER FLASK

Specially designed by Kimble for use in mixing and storing culture media and for many chemical purposes. Caps can be steam sterilized.

14925

MILK DILUTION BOTTLE

Complies with requirements of APHA. Features smooth marking spot. Graduation line at 99 ml. Has plastic screw cap with cemented-in rubber liner.

KIMAX is available through dealers in the United States, Canada and principal foreign cities.

KIMBLE LABORATORY GLASSWARE
AN (O) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES · TOLEDO 1, OHIO

V-CILLIN K®...

dependable, fast, effective therapy

V-Cillin K produces therapeutic blood levels in all patients within five to fifteen minutes after administration—levels higher than those attained with any other oral penicillin. Infections resolve rapidly. *Dosage:* 125 or 250 mg. three times daily. *Supplied:* In scored tablets of 125 and 250 mg. (200,000 and 400,000 units).

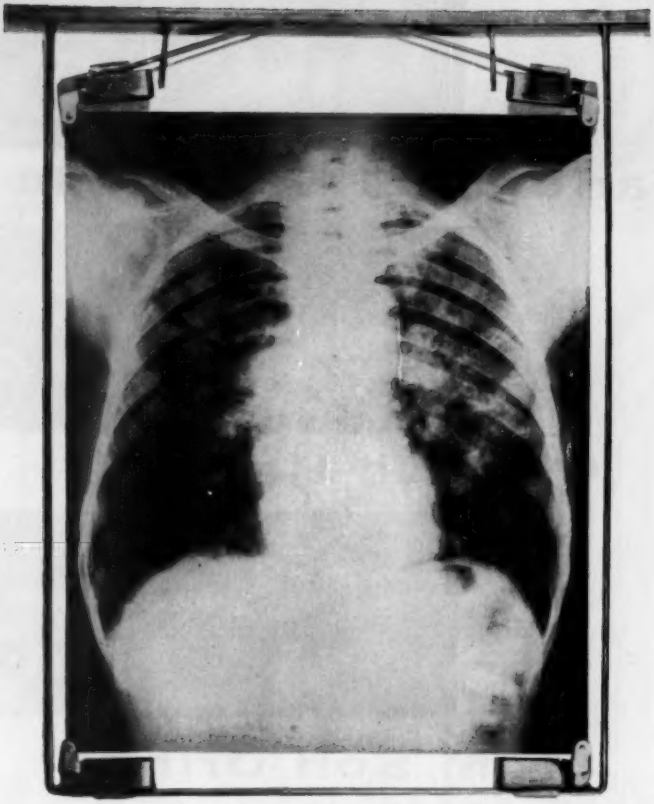
New: V-Cillin K® Sulfa. Each tablet combines 125 mg. of V-Cillin K with 0.5 Gm. of the three preferred sulfonamides.

New: V-Cillin K, Pediatric, a taste treat for young patients. In bottles of 40 and 80 cc. Each 5-cc. teaspoonful provides 125 mg. of V-Cillin K.

V-Cillin K® (penicillin V potassium, Lilly)
V-Cillin K® Sulfa (penicillin V potassium with triple sulfas, Lilly)

ELI LILLY AND COMPANY • INDIANAPOLIS 6, INDIANA, U.S.A.

813220



when tuberculosis defies routine therapy

VIOCIN®

brand of
viomycin sulfate

Available in vials of 1 Gm. and 5 Gm. dry powder for preparation of solutions for intramuscular injection only.

In at least half the cases of tuberculosis that might otherwise have been said to have "no prognosis," Viocin® (viomycin sulfate) has been used with success, in stabilizing and even arresting resistant progressive disease.[1-2] Toxicity observed with viomycin is related chiefly to dosage. When recommended dosages and precautions are followed, toxic reactions are unlikely to occur with any degree of frequency or severity. Consult professional literature for details of dosage, administration, contraindications and toxicity.

Also available for tuberculosis therapy:

streptomycin sulfate—dry powder and solution • *dihydrostreptomycin sulfate*—dry powder and solution • *Streptohydrazid**—a crystalline compound combining streptomycin and isoniazid • *Cotinazin®*—brand of isoniazid • *Combistrep**—brand of streptoduocin—equal parts of streptomycin and dihydrostreptomycin.

References: 1. McLean, R. L., and Benson, W. P.: Tr. 15th Conference on Chemotherapy of Tuberculosis, 1956, p. 122. 2. Murdoch, J. M., and Stewart, S. M.: Brit. J. Tuberc. 50:85 (Jan.) 1956.

*Trademark

Pfizer *Science for the world's well-being*

PFIZER LABORATORIES, Division, Chas. Pfizer & Co., Inc.
Brooklyn 6, N. Y.

Cariogenic Enzymatic Activity

Gets No Help

From Soft Drinks

In judging foods for caries-producing potential . . . the two important factors are: (1) The form of the food and (2) the amount of time the food is in the mouth. Recent dental research* makes it apparent that liquids leave only minimal residue on gums or teeth because they pass quickly through the mouth. Therefore liquids provide little opportunity for enzymatic activity as a cause of dental caries.

Specifically, soft drinks are found to have virtually no relationship to oral conditions involved in the acidogenic theory. They may be fully enjoyed for their wholesome and beneficial qualities. Their taste encourages needed liquid intake. They provide quick energy pick-up and ready refreshment.

*Shaw, Jas. H., Caries-producing Factors; a Decade of Dental Research, J. Am. Dent. A., 55:785 (Dec.) 1957.

Ludwig, T. G., and Bibby B. G., Acid Production from Different Carbohydrate Foods in Plaque and Saliva; Further Observations Upon the Caries-Producing Potentialities of Various Foodstuffs, J. Dent. Research, 36:56 (Feb.) 1957.

Bibby, B. G., Effect of Sugar Content of Foodstuffs on Their Caries-Producing Potentialities, J. Am. Dent. A., 51:293 (Sept.) 1955.

American Bottlers of Carbonated Beverages

Washington 6, D.C.

Decadron.

DEXAMETHASONE

treats more patients more effectively...

Of 45 arthritic patients
who were refractory
to other corticosteroids*

22 were successfully
treated with **Decadron** [1,2]

1. Boland, E. W., and Headley, N. E.: Paper read before the Am. Rheum. Assoc., San Francisco, Calif., June 21, 1958.
2. Bunim, J. J., et al.: Paper read before the Am. Rheum. Assoc., San Francisco, Calif., June 21, 1958.

*Cortisone, prednisone and prednisolone.

DECADRON is a trademark of Merck & Co., Inc.

Additional information on DECADRON is available to physicians on request.

MSD Merck Sharp & Dohme

DIVISION OF MERCK & CO., Inc., PHILADELPHIA 1, PA.

The Original Quaternary...

Roccal

Reg. U. S. Pat. Off. and Canada

BRAND

SANITIZING AGENT

Prepared like a Fine Pharmaceutical

In every step of its manufacturing, ROCCAL is laboratory controlled . . . prepared with utmost precision under rigid specifications. For ROCCAL, the nation's first and foremost quaternary ammonium germicide, is a product of one of the world's leading pharmaceutical manufacturers.

Triple-checked to insure uniformity, potency and quality, ROCCAL is initially tested at the manufacturing level. Then a sample of each batch of ROCCAL must pass a comprehensive examination at Sterwin's Control Laboratories at Rensselaer, New York. A third and final test is made when the product is bottled.

Many public health and sanitation officials throughout the country recognize ROCCAL as the "standard" quaternary ammonium germicide. In restaurants, taverns, soda fountains, schools, dairies, hotels, food processing and packing plants, institutions—wherever a reliable germicide is required—ROCCAL can be depended upon to do a better sanitizing job *every* time.

In recommended dilutions, ROCCAL is a potent bactericide: stable, tasteless, odorless, stainless, non-irritating, non-corrosive, non-poisonous.

Further technical information on ROCCAL and samples will be gladly provided on request . . .

NEW! *A rapid and practical field test for determining concentration of Roccal solutions.*

Write for descriptive folder.

Sterwin Chemicals Inc.

Subsidiary of Sterling Drug Inc.

1450 Broadway, New York 18, N. Y.

ORAL ANTIDIABETIC THERAPY HAS NOT FAILED FOR THIS PATIENT... THANKS TO DIABINESE®

brand of chlorpropamide

The specific pharmacologic properties of DIABINESE – high activity, freedom from metabolic degradation, and gradual excretion – permit (1) prompt lowering of elevated blood sugar levels *without a "loading" dose*, and (2) smooth, sustained maintenance "devoid of . . . marked blood sugar fluctuations"[1] on convenient, lower-cost, once-a-day dosage. This is the consensus of extensive clinical literature.[1-11] Widespread use of DIABINESE since its introduction has confirmed the low incidence of side effects reported by the original investigators.

Thus, DIABINESE merits *first* consideration for any diabetic presently receiving or potentially better managed with oral therapy – including many diabetics for whom previous oral agents have proved ineffective.

Supplied: Tablets, white, scored 250 mg., bottles of 60 and 250; 100 mg., bottles of 100.

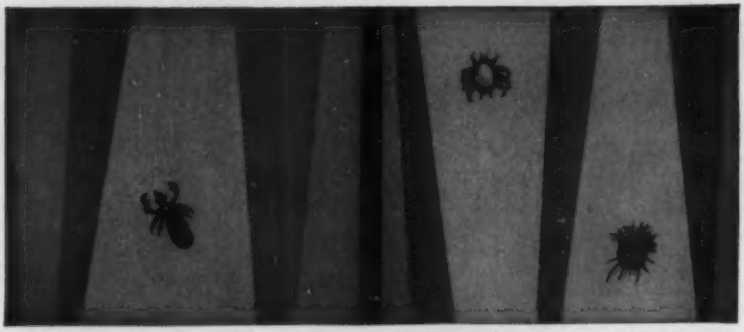
tablets/once-a-day dosage

effective in 85% of patients who have become refractory to other oral agents

Pfizer *Science for the world's well-being*

PFIZER LABORATORIES, Brooklyn 6, New York
Division, Chas. Pfizer & Co., Inc.

1. Greenhouse, B.: Ann. New York Acad. Sc. 74:643, 1959. 2. Dobson, H., et al.: Ibid., p. 940. 3. Forsham, P. H.; Magid, G. J., and Dorosin, D. E.: Ibid., p. 672. 4. Beaser, S. B.: Ibid., p. 701; New England J. Med. 259:573, 1958. 5. Blóch, J., and Lenhardt, A.: Ann. New York Acad. Sc. 74:954, 1959. 6. O'Driscoll, B. J.: Lancet 2:749, 1958. 7. Hadley, W. B.; Khachadurian, A., and Marble, A.: Ann. New York Acad. Sc. 74:621, 1959. 8. Duncan, G. G.; Schless, G. L., and Demeshkieh, M. M. A.: Ibid., p. 717. 9. Handlesman, M. B.; Levitt, L., and Calabretta, M. F.: Ibid., p. 632. 10. Hills, A. G., and Abelove, W. A.: Ibid., p. 845. 11. Drey, N. W., et al.: Ibid., p. 962.



KWELL®

GAMMA BENZENE HEXACHLORIDE 1%

new
shampoo

ERADICATES
PEDICULOSIS CAPITIS AND PUBIS
IN 4 MINUTES

"A single shampooing sufficed to eradicate infestation . . . in all cases...in a few minutes." ■
Gardner, J.: J. Pediat. 52:448 (Apr.) 1958.

SUPPLIED: KWELL Shampoo: bottles of 2 & 16 fl. oz.

cream & lotion

IN SCABIES,
CHIGGERS AND
PEDICULOSIS

95% to 100% effective in 1 treatment — acts fast — non-irritating — nonstaining. ■

SUPPLIED: KWELL Cream: jars of 2 oz. & 1 lb. — KWELL Lotion: bottles of 2 & 16 fl. oz.

REED & CARNRICK / Jersey City 6, New Jersey

WHO'S TO BLAME?

Food faddists come in all ages, shapes, sizes and varieties. They attach almost magical properties to some foods. They think other foods tabu, even poisonous.

The quack cashes in. He promotes or sells ideas or products on the claim they will cure a faddist's real or imagined ills. The quack promises to restore youthful charm and vigor; to reduce weight without diet change, strain or harm; to protect his fearful customer against the supposed impoverishment of modern foods.

Food faddism costs Americans an estimated half-billion dollars a year. But there is a tragic larger bill. Fad diets endanger health dependent on good nutrition. The faddist gluts himself on foods of fancied benefit and shuns foods supplying needed nutrients. Money better spent for groceries often goes for extravagantly priced "health foods," or for unnecessary or even hazardous potions, pills and nostrums.

WHO'S TO BLAME?

You may agree . . . food faddism persists for just one reason—public ignorance. Responsibility for education to overcome this ignorance is shared by all with professional knowledge—the physician, dentist, dietitian, nurse and nutritionist. It is a responsibility shared, too, by food producers.

Wheat growers, millers, and bakers (as well as other businessmen in the farm-to-table chain of food) support continuing nutrition education. May we send you our materials, and receive your suggestions on how all may work together more effectively to defeat food faddism and quackery?

ENRICHED . . .

and whole wheat flour foods are listed among the "Essential Four" food groups set up by the Bureau of Human Nutrition—U.S. Department of Agriculture. Diet selected from these foods provides ample protein, vitamins and minerals.

WHEAT FLOUR INSTITUTE

working for a healthier America through nutrition

FREE – USE COUPON OR SEND Rx BLANK

To: Wheat Flour Institute
309 West Jackson Blvd., Chicago 6, Illinois

Dept. AJP-1

Please send me samples of your nutrition education materials, plus suggestions for the coordination of community campaigns in nutrition.

(Please print)

NAME_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

the V-notch

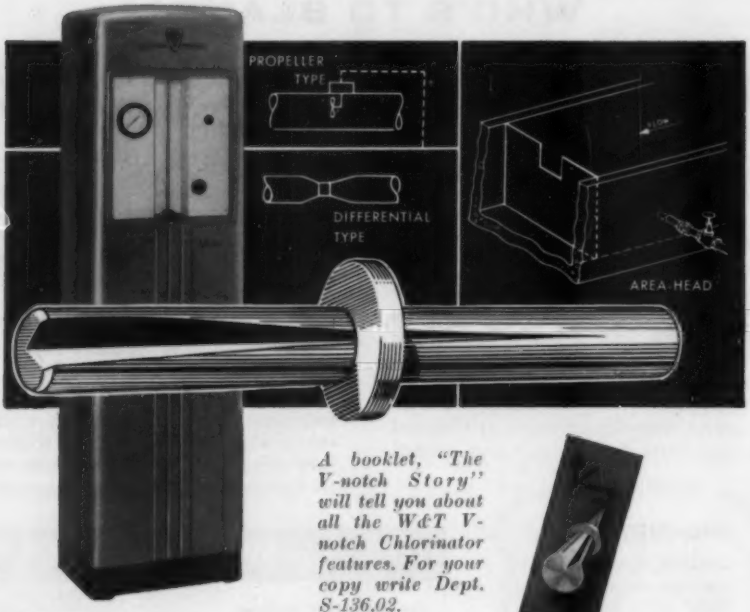
ready and waiting for your signal

Lots of jobs are done better automatically. Changing chlorine feed rate is now one of them. With the V-notch...the straight line metering action of the plug through the ring makes automation simple.

Merely by adding, not adapting, a W&T V-notch Chlorinator can give you any degree of automatic control you want—step rate, start-stop, program, proportional, even residual control.

With a V-notch Chlorinator any signal from any primary metering device can control chlorine feed. So anyone can afford automation.

And, of course, the right plastics make the whole chlorinator chlorine-proof.



A booklet, "The V-notch Story" will tell you about all the W&T V-notch Chlorinator features. For your copy write Dept. S-136.02.

WALLACE & TIERNAN INCORPORATED

25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

Journal of Public Health

This is an epidemiological study of the 1957-1958 epidemic of Asian influenza in New York City. It is based on serums collected by the syphilis serology laboratory of the City Health Department.

A LABORATORY ANALYSIS OF THE 1957-1958 INFLUENZA OUTBREAK IN NEW YORK CITY.

II. A SEROEPIDEMIOLOGICAL STUDY

Daniel Widelock, Ph.D., F.A.P.H.A.; Sarah Klein, M.P.H.; Olga Simonovic; and Lenore R. Peizer, F.A.P.H.A.

DURING THE 1957-1958 influenza outbreak in New York City, the pneumonia-influenza mortality curve rose above the expected rate in two distinct periods: between October 4 and October 18, 1957, and between January 17 and March 7, 1958. In a preliminary paper[1] seroepidemiologic results were reported associating each increase in the pneumonia-influenza mortality curves with increases in the percentage of serums containing Hemagglutination-Inhibition (HI) antibodies against the influenza virus (Asian).

The preliminary paper[1] reported the seroepidemiologic results between September 16, 1957, and February 28, 1958. This paper extends the observations through September, 1958.

Method

Details of the method employed are described in the preliminary report.[1] Briefly, 6,741 serums were collected without selection from the syphilis serology laboratory. The collection began on September 16, 1957, and was continued, at weekly intervals, until May 30, 1958, and thereafter at bimonthly intervals, until September 30, 1958.

The syphilis serology laboratory receives from 2,000 to 3,500 specimens per day from all parts of the city, from any physician of the city for premarital, prenatal, and diagnostic purposes. In the preliminary report[1] evidence was presented that no significant difference in the per cent-positive for Asian anti-

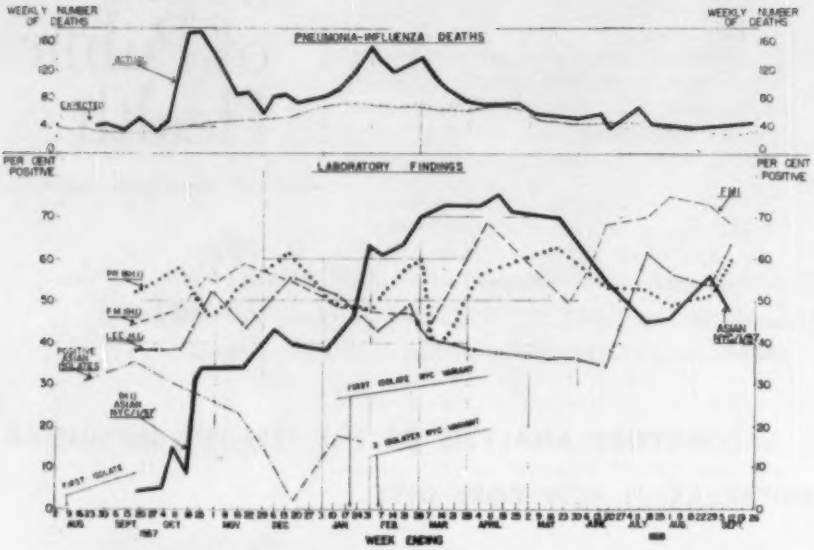


Figure 1—Influenza, New York City, 1957-1958. Correlation of Laboratory Findings with Pneumonia-Influenza Mortality

bodies existed among the serums originally submitted for premarital or diagnostic tests for syphilis. There was a lower percentage among the prenatal specimens.

The serums were tested individually by the standard pattern HI test[2] after treatment with potassium periodate, and were inactivated at 56°C for 30 minutes. They were screen tested at a 1:8 (original) dilution by the NYC/1/57 (Asian) and 1:16 (original) dilution by the PR8 (A), FM1 (A prime), and B/Lee viruses.

Results

The curve depicting the weekly percentage of individuals with HI antibodies to the NYC/1/57 virus between September 16, 1957, and September 30, 1958, is found in Figure 1. The close correlation of this curve with the pneumonia-influenza deaths (Figure 1) during the influenza epidemic has been previously discussed.[1] To extend these observations, we can divide Figure 1 into six distinct phases.

Phase 1, between August 6 and October 4, 1957—During this period the virus began to disseminate throughout the New York City population. The virus was first isolated in New York City from specimens obtained from foreign exchange students on August 6, 1957. Between September 16 and October 4 about 4.5 per cent of the serums tested reacted with the Asian virus. During this period the pneumonia-influenza deaths were within the expected range.

Phase 2, between October 4 and October 25, 1957—This period is characterized by a sharp rise to 35 per cent of the population with the Asian strain, and is associated with a simultaneous sharp rise in the pneumonia-influenza deaths.

Phase 3, between October 25, 1957, and January 10, 1958—A relatively quiet period, during which the percentage of individuals reacting to the Asian virus did not vary significantly (36 and 42 per cent). The mortality rate was normal and remained so until the next phase.

Phase 4, between January 10 and February 28, 1958—There was a second rise in the percentage of individuals with positive HI reactions to Asian virus, from 40 per cent on January 3 to over 70 per cent on February 28, coinciding with a second rise in pneumonia-influenza deaths.

This second increase in the HI curve extended over a considerably longer period, seven weeks, as compared to the three weeks of the first wave.

Phase 5, between March 14 and May 30—A normal pneumonia-influenza mortality rate was associated with a stable HI level for Asian antibodies, remaining at over 70 per cent for about ten weeks.

Phase 6, between May 30 and September 30, 1958—The percentage of individuals positive to the Asian virus decreased from a high of over 70 per cent to less than 50 per cent.

It is interesting to note that the percentage of individuals positive to FM1 virus began to rise during the second wave of the outbreak (about March 14). This rise continued until the end of the testing period (September 30) when it reached its maximum of over 70 per cent. A striking aspect of this rise is that it attained its height when the Asian curve was descending. The association of the FM1 and Asian antibodies will be discussed below.

Were all the tested age groups equally infected by the Asian virus? To answer this question, the age groups were analyzed individually for each phase of the outbreak. Figure 2 represents the

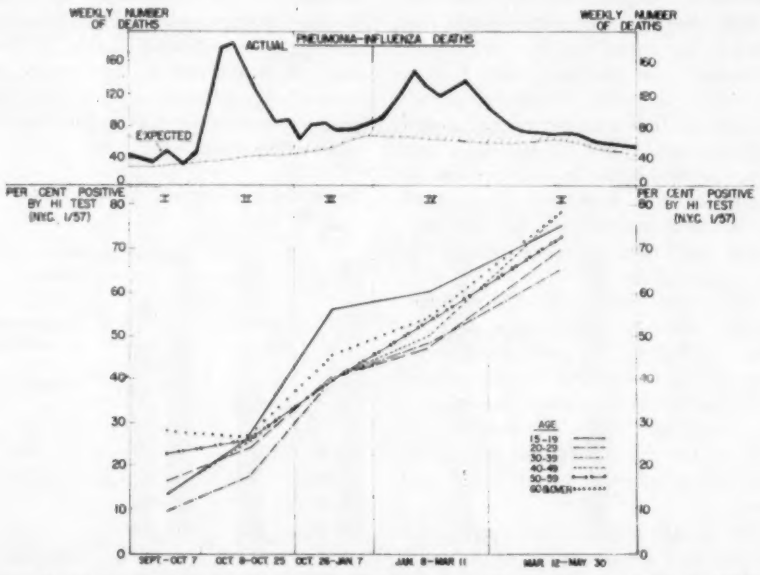


Figure 2—Influenza, New York City, 1957-1958. Age, Distribution by Periods, HI Test for Asian Influenza

Table 1—Influenza, New York City, 1957-1958—Per cent of Serum Reactors* to NYC/1/57 at Different Periods of Outbreak

A	B	C	D	E	F
	At End of First Wave (January, 1958)		Reactors at End of Second Wave (March, 1958)	Increase in Per cent Reactors From First to Second Wave	Per cent of Nonreactors at End of First Wave Reacting at End of Second Wave
Age	Reactors	Nonreactors			
15–19	56	44	75	19.0	43.1
20–29	40.8	59.2	70	29.2	49.3
30–39	40.1	59.9	66	25.9	43.2
40–49	40.1	59.9	79.1	39.0	65.1
50–59	39.7	60.3	72.7	33.0	54.7
>60	45.2	54.8	78.8	33.6	61.6

* Reactor—Hemagglutination inhibition by 1:8 diluted (initial dilution) serum.

percentage of individuals of each age group, with Asian antibodies, during phases 1 through 5 of the outbreak.

It is apparent that during the first wave of the mortality curve (phase 2) all age groups were about equally infected. The curve for the 15-19 year individuals rose during phase 3 at a faster rate than the remainder of the population. However, during the second wave (phases 4 and 5) the older age groups were infected at a higher rate so that by the end of phase 5 the percentage of individuals with positive HI antibodies was about the same among the entire population.

The attack rate by the Asian virus for the different age groups may be seen in Table 1. The percentage of reactors to the Asian virus was determined at the end of the first wave, the remaining nonreactors were therefore considered to be the susceptible population which were infected during the second wave.

The attack rate, by age groups, for the first and second waves of the influenza outbreak, are given in columns B and F of Table 1.

When the HI antibodies were titrated, it was observed that during the first wave 45.0 per cent of the serums of individuals with Asian antibodies reacted to a titer of 1:32 or greater, and about an equivalent percentage (49.5 per cent) during the second wave (Table 2). However, when analyzed by age groups, the younger age group proved to be better antibody-producers, during both the first and second waves (Table 2).

Table 2—Influenza—New York City 1957-1958

	Per cent of Reacting Serums with HI Antibodies 1:32 or Greater		
Age	September to January 7 (First Wave)	January 8 to May 30 (Second Wave)	Per cent of Increase of Second Wave Over First Wave
15–19	53	66.6	13.0
20–29	38.6	48.6	10.0
30–39	41.3	45.1	3.8
40–49	42.8	48.5	5.7
50–59	40.5	45.6	5.1
>60	41.8	42.8	1.0
Total	45.0	49.5	4.0

The loss of Asian (HI) antibodies, which began about ten weeks after the completion of the second wave (Figure 1) is further depicted in Figure 3. It will be noted that the increase in the percentage of negative serums in the June-September 30 specimens (phase 6) was due to a loss of the low-titered 1:8 or 1:16 serums of the previous phase. When the 1:32 or greater titers are examined, no difference is seen between phases 5 and 6.

This increase in the percentage of serums negative for HI antibodies was not found to be distributed equally among all the age groups. An examination of Figure 4 reveals that all age groups, at the end of the second wave (May 30) had about an equal number of serums which were HI-negative for the NYC/1/57 (Asian) virus. However, when the percentage of negatives for the NYC/1/57 was determined during the June-September 30 phase, it was found that there was a direct relationship between increase in age and increase in per cent-negative. Thus, the loss of HI antibodies for the Asian virus occurred to the greatest extent in the older age groups.

A similar relationship between age and per cent-negative for HI antibodies may be seen for the PR8, FM1, and Lee viruses (Figure 4). A significant difference exists between the low and high points in Figure 4 for each of the curves.

The rise in the percentage of individuals with HI antibodies to the FM1 virus after the second wave of the outbreak, and during the period of the decline in the Asian HI curve, was previously noted (Figure 1).

It was postulated that if this rise in the FM1 curve was associated with the infection by the Asian virus, a direct relationship should exist between reaction to the Asian virus and the percentage of individuals with FM1 antibodies reacting at titers of 1:32 or greater.

Serums containing FM1 antibodies were therefore examined to determine the percentage of these specimens with titers of 1:32 or greater, as well as for their Asian antibody titer. A similar

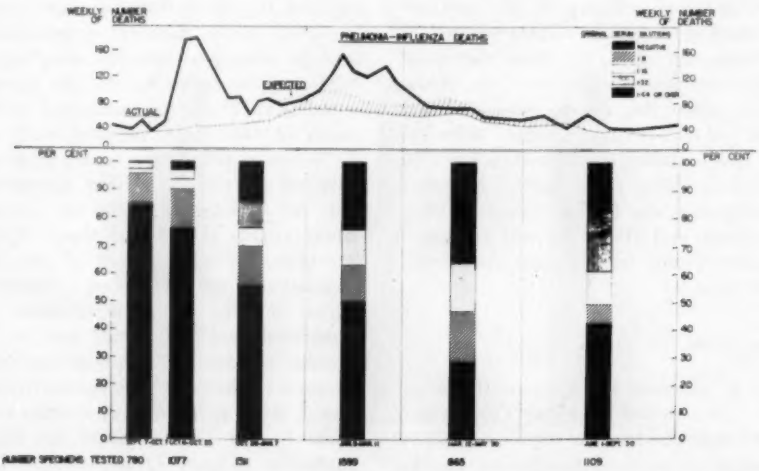
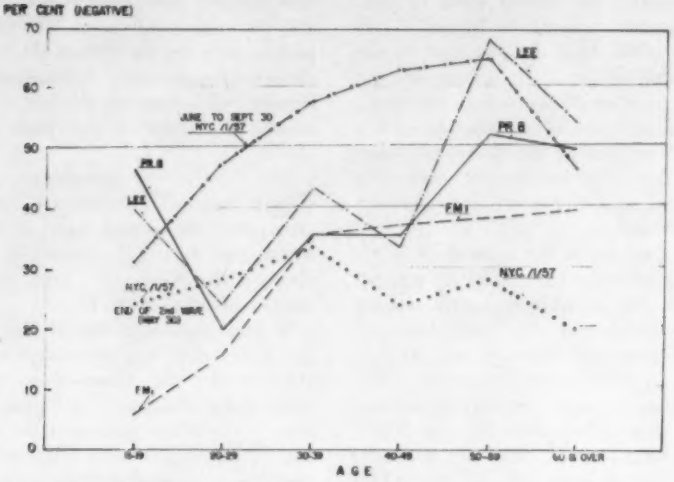


Figure 3—Influenza, New York City, 1957-1958. Serologic Results of 6741 Serums, HI Test with NYC/1/57 (Asian) Virus

Figure 4—Negative* HI Antibody. Results for New York City Population Tested, Age and Virus Distribution



* New York City/1/57—Negative at 1:8 initial dilution.
PR 8, FM1, Lee—Negative at 1:16 initial dilution.

study was made for the relationship between the Asian titers and PR8, as well as between Asian and Lee.

The results of these determinations may be found in Figure 5; 45.7 per cent of the FM1 reacting serums titrated to a minimum of 1:32 when the same specimens were negative to the Asian virus, while the results were 58.3 per cent and 69.7 per cent for the FM1 when the Asian antibodies titrated to 1:8-1:16 and 1:32-1:256, respectively. A similar relationship was found to exist between the Asian and PR8 virus, and to a much smaller extent between the Asian and Lee virus.

Discussion

It is necessary to emphasize that since the serums tested were only those which were submitted to the syphilis serology laboratory, no final conclusions can be drawn for the entire New York City population. A recognized deficiency is the lack of specimens in the under-15-year-age groups, and no breakdown of the specimens was made for socioeconomic factors. They were classified for age and date of obtaining the specimens. However, for a number of reasons it may be postulated that the sampling is fairly representative for the age groups tested: (a) The large number of specimens (2,000-3,500) received daily in the serology laboratory comes from all parts of the city. (b) The premarital tests for syphilis are performed by this laboratory, at the rate of about 90,000 per year, for all segments of the city population, regardless of economic status. (c) The specimens submitted for premarital tests for syphilis and for diagnostic reasons, by the physicians from all parts of the city, gave similar results when tested for the Asian influenza antibodies.[1] (d) The curve for the Asian antibodies (Figure 1) indicates a close correlation with the pneumonia-influenza mortality curve, for which the data

are city-wide. (e) The relative smoothness of the Asian antibody curve (Figure 1) strengthens acceptance of the reliability of the sampling procedure.

The striking aspect of this epidemic is that the spread of the Asian influenza virus in New York City resulted in three plateaus of antibody level for the population tested (a) before the epidemic, (b) after the first wave, and (c) after the second wave. Each change in plateau coincided with a rise (Figure 1) in the pneumonia-influenza death rate.

During the first plateau the older age groups, 50 years and over, seemed to contain a greater percentage of individuals with Asian antibodies. One is tempted to associate this observation with possible past experiences with Asian-like antigens, though no evidence for this association is offered.[3,4]

The third plateau lasted for about ten weeks and was followed by the decline in the Asian antibody level. This decline was probably due to the loss of Asian antibodies in the serums which originally only gave a titer of 1:8, and to a lesser extent, 1:16. Individuals with titers of 1:32 or more probably remained in the 1:32 or more titer group until the end of this testing period; 28 weeks after the end of the second wave (Figures 1 and 3). This is not to say that titers of individuals of more than 1:32 did not fluctuate but that they did not decrease below 1:32 in large numbers. This may be seen in Figure 3 where the percentage of 1:32 or greater titers did not vary significantly in the two last phases of the study.

It is important to note that the loss of the HI antibody occurred primarily in the older age groups (Figure 5). The direct relationship between age and loss of HI antibody, between May 30 and September 30 is clearly indicated in Figure 4. For example, at the end of the second wave of the Asian virus infection, (May 30) 25 per cent of the 15-19-year group were without any HI antibodies. This percentage became

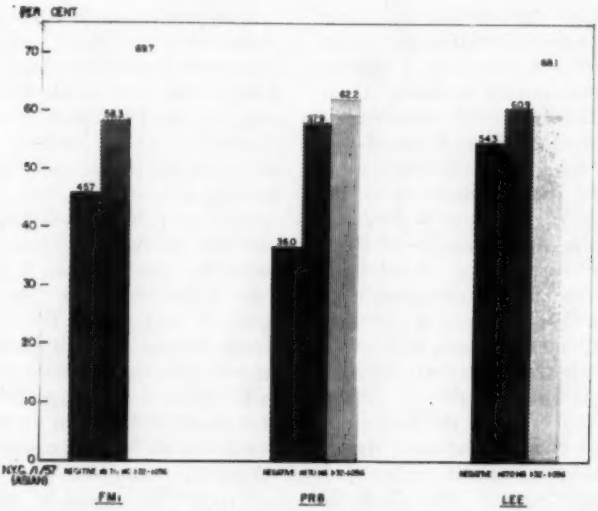


Figure 5—Relationship of Asian Titer and 1:32 or More Titer of FM1, PR8, and Lee

about 31 per cent on September 30. These percentages then become 30 and 50 per cent for the 20-29-year group; 32 and 59 per cent for the 30-39-year group; 21 and 62 per cent for the 40-49-year group; 25 and 64 per cent for the 50-59-year group; and 20 and 46 per cent for the 60 and over group.

A similar relationship between age and per cent-negative HI antibodies may be seen in Figure 4 for the PR8, FM1 and Lee viruses. If the low point of the curve for any of the viruses is first determined (15-19-year group for FM1, 20-29-year group for Lee and PR8) all subsequent age groups will show a trend towards an increasing percentage of individuals with $<1:16$ HI antibody titers.

This age and antibody relationship appears to be a phenomenon which exists with other antibodies besides influenza.[5] For example, a quantitative curve of the isoagglutinin titers of the blood groups similarly reaches its peak with the ten-year-age group and falls gradually through successive age groups.[6]

In the past years before the Asian virus epidemic appeared, many investigators attributed anamnestic responses to different strains of influenza virus. Hare and Riehm in 1941[7] repeated the suggestion by Francis and Magill that a nonspecific response induced by contact with the related human virus, the PR8, during early years of life, was responsible for the production of swine antibody in later years. Bodily and Eaton[8] also recorded an anamnestic reaction for different strains of influenza A. In addition, these authors reported that several persons infected or vaccinated with influenza A showed also an output of antibodies to the Lee virus. Horsfall and Rickard[9] reported significant rise in titer against swine virus in epidemics of virus A influenza as did Sigurdsson and Bjarnason[10] who reported significant HI titers in convalescent specimens for both PR8 and swine following an outbreak of influenza in Iceland.

In 1957, Boger and Liu[11] reported that a vaccine without the Asian component developed significant Asian antibodies in three women born in Europe, and suggested an anamnestic response.

In Figure 5 we noted the relationship between the development of Asian antibodies and antibodies against FM1, PR8, and Lee. Two explanations may be offered for this direct relationship: (1) that individuals who produce good titers for one influenza strain will do so for others and that we are actually culling the good antibody-producers in Figure 5, or (2) that an associated response does exist and that it is greater between the Asian, A′ (FM1), and A (PR8) than between the Asian and B (Lee).

That the first explanation may not tell the complete story is indicated by the rise in FM1 curve of the total population as seen in Figure 1, where there was no apparent culling of specimens, on the basis of ability to produce antibodies.

It appears to us that infection by the Asian virus in New York City may have produced an increased response at least in the FM1 antibodies and probably in the PR8 also. That the Lee antibodies can be involved too is also suggested by Bodily and Eaton's previous report.[6]

In Figure 4 we noted the negative antibody picture for New York City as of the current year. In Table 3 we present the New York City population, aged 15 and over. The older people (ages 30 and over) appear to be the groups with less antibody protection. It is the older age groups who, after infection with the Asian virus, lost their antibodies to a greater extent than did the younger people.

Every effort must be made to develop a program which considers the more vulnerable older population. That

Table 3—Percentage Distribution of the Population* of New York City—15 Years of Age and Over

Age	Population	Per cent
15–19	450,000	7.5
20–29	1,050,000	17.6
30–39	1,180,500	19.8
40–49	1,168,000	19.6
50–59	1,006,500	16.9
60 and over	1,114,000	18.6
Total	5,969,000	100.0

* Taken from the Special Census, April 1, 1957. Figures are rounded to the nearest 500.

a high level of antibody protection is important has been demonstrated by Smorodintseff, et al.,[12] and by Salk, et. al.,[13] who showed that clinical symptoms following infection with influenza virus and low antibody titers in serums can be directly correlated.

Summary and Conclusions

1. There were 6,741 individual serums collected from patients, aged 15 and over, from the syphilis serology laboratory—at weekly intervals—from September, 1957, through September, 1958, and tested for NYC/1/57 (Asian), FM1, PR8, and Lee antibodies.

2. A close association was found between the excess influenza-pneumonia mortality curves and the curve depicting the percentage of individuals with HI antibodies positive to the NYC/1/57 (Asian) virus.

3. Two distinct waves of infection with the Asian virus occurred in the 1957-1958 influenza epidemic. The first wave, which occurred in New York City during October, 1957, resulted in infecting 35 per cent of the population tested with the Asian virus (the population of New York City, 15 years and over, during 1957, was 5,969,000). All the age groups tested appeared to be equally infected, although the 15-19-year group continued to become infected, even during the relative quiescent period between the two waves of infection.

The second wave of infection by the Asian virus occurred about ten weeks after the end of the first wave. It lasted for a longer period than did the first wave, from the beginning of January through the beginning of March, and infected an additional 30-35 per cent of the tested population.

At the end of the second wave more than 70 per cent of the population tested had antibodies against the Asian virus. During the second wave, the attack rate for the older population was slightly higher than for the younger 15-19-year group.

4. The attack rates by the Asian virus during the first wave were 50 per cent for the 15-19-year age group, and between 39.7 and 45.2 per cent for the other age groups. During the second wave of infection the attack rate was 43.1 per cent for the 15-19 and 30-39 group, 49.3 per cent for the 20-29-year group, and between 54.7 per cent and 65.1 per cent for the 40-year and over groups.

These attack rates, therefore, were fairly uniform for all age groups, and for both waves, fluctuating between approximately 40 per cent and 60 per cent of the population tested.

5. About ten weeks following the end of the second wave, the Asian antibody curve of the tested population began to decline from a maximum of over 70 per cent to about 50 per cent, six weeks later, and remained so during the next two months (when this study was completed.)

The decline in the Asian antibody curve was probably due primarily to a loss of antibodies in serums with low antibody titers of 1:8 and 1:16. The 1:32 and over serum titers remained constant.

6. There was a relationship between age and loss of Asian antibodies as tested in period between May 30 (end of second wave) and September 30 (end of this study).

7. Infection with the Asian virus was associated with an increase in titers of FM1 and PR8 HI antibodies. A possible association with Lee antibodies is also demonstrated.

8. The present state of immunity in the New York City population tested, as measured by presence or absence of HI antibodies against NYC/1/57, PR8, FM1, and Lee viruses, is presented by specific age groups. A relationship exists between age and absence of HI antibodies against the viruses mentioned. Its possible significance is discussed.

REFERENCES

1. Widelock, D.; Klein, S.; Pelzer, L. R.; and Simonovic, O. Laboratory Analysis of the 1957–1958 Influenza Outbreak (A/Japan) in New York City. I. Preliminary Report on Seroepidemiologic Investigation and Variant A/Japan Isolate. J.A.M.A. 167:541 (May 31), 1958.
2. Committee on Standard Serological Procedures in Influenza Studies. J. Immunol. 65:347 (Sept.), 1950.
3. Mulder, J. Asiatic Influenza in Netherlands. Lancet 2:334, 1957.
4. Hilleman, M. R.; Flatley, F. J.; Anderson, S. A.; Luecking, M. L.; and Levinson, D. J. Distribution and Significance of Asian and Other Influenza Antibodies in the Human Population. New England J. Med. 258:969–974 (May 15), 1958.
5. Baumgartner, L. The Relationship of Age to Immunological Reactions. Yale J. Biol. & Med. 6:605, 1953–1954.
6. Thomsen, O., and Kettal, K. Die Starke der menschlichen Isoagglutinine und entsprechenden Blutkorperchenrezeptoren in verschiedenen Lebensaltern. Zischr. Immunitatsforsch 63:67, 1929.
7. Hare, R., and Rhiem, W. C. Long-Term Variations in the Titer of Neutralizing Antibody for Influenza Virus in the Sera of Adults and Children. J. Immunol. 40:253, 1941.
8. Bodily, H. L., and Eaton, M. D. Specificity of the Antibody Response of Human Beings to Strains of Influenza Virus. J. Immunol. 45:193, 1942.
9. Horsfall, F. L., and Rickard, E. R. Neutralizing Antibodies in Human Serum After Influenza A. The Lack of Strain Specificity Immunological Response. J. Exper. Med. 74:433, 1941.
10. Sigurdsson, B., and Bjarnason, O. Immunological Studies on an Epidemic of Influenza in Iceland. A.J.P.H. 36:130, 1946.
11. Boger, W. P., and Liu, O. C. Subcutaneous and Intradermal Vaccination with Asian Influenza Vaccine. J.A.M.A. 165:1687 (Nov. 30), 1957.
12. Smorodintseff, A. A.; Tushinsky, M. D.; Drobipheyskaya, A. I.; Korovin, A. A.; and Osetroff, A. I. Investigation on Volunteers Infected with the Influenza Virus. Am. J. M. Sc. 194:159, 1937.
13. Salk, J. E.; Menke, W. J.; and Francis, T. A Clinical, Epidemiological and Immunological Evaluation of Vaccination Against Epidemic Influenza. Am. J. Hyg. 42:57, 1945.

The authors are associated with the Bureau of Laboratories, New York City Department of Health.

This paper was presented before the Laboratory Section of the American Public Health Association at the Eighty-Sixth Annual Meeting in St. Louis, Mo., October 29, 1958.

Journals Wanted

The Association has received several requests for the January and February, 1959, Journals from persons who bind the magazines. These persons and the Association would be grateful if members having no use for these particular issues would make them available to others. Such generosity will be much appreciated. The magazines should be sent to the Association office at 1790 Broadway, New York 19, N. Y.

While the incidence of communicable diseases has generally declined and this trend continues, communicable disease control still remains an important public health problem. The reasons for this significance are discussed in this paper and the relevance of the facts for public health nursing are emphasized.

CHALLENGE OF COMMUNICABLE DISEASE TODAY—NURSING OPPORTUNITIES

Mary R. Lester, R.N., M.P.H., F.A.P.H.A.

DESPITE AN ENCOURAGING, consistent decline in the incidence of communicable diseases, they remain a major public health problem today. More than a million and a half people die each year from all causes in this country. One of every 12 of these deaths is caused by a communicable disease. This means that every year more than 130,000 people die as a result of communicable disease. These deaths occur most frequently among children and young adults in their formative and productive years. Based on 1955 data (the latest complete information available), 18.7 per cent of all deaths in the age group under 35 were due to communicable disease, compared with 6.6 per cent of the deaths in the age group 35-65, and 8.1 per cent of total deaths in persons over 65 years of age. Communicable diseases rank second as the cause of death before age 35, being responsible for as many fatalities as motor vehicle accidents, cancer, and heart disease combined. Mortality is highest among children, with the greatest percentage occurring between the ages of three and five. Only congenital malformations, birth injuries, and other causes of infant deaths surpass infectious diseases as killers of our youth.

Morbidity rates for communicable diseases also are a matter of national concern. More than one and a half million infections are reported yearly in the United States. Reported cases, however, represent only a fraction of the total illnesses that occur. Influenza, common colds, and other upper respiratory infections, as well as diarrhea, gastroenteritis, and a number of other communicable diseases are not reported routinely to the National Office of Vital Statistics. In some instances outbreaks or epidemics of these diseases are reported, but this is not consistently true. Available statistical data show us only about one-third of the existing problem —like the iceberg, two-thirds are unexposed.

Another charge against communicable diseases is residual disability. In addition to producing acute illness and death, these infections cause prolonged suffering, economic loss, and enormous expenditures for treatment and hospitalization. Among the many chronic illnesses resulting from acute infection are liver disease following viral hepatitis, heart and kidney diseases resulting from streptococcal infections, bone erosion from staphylococcal invasion, and per-

manent mental impairment from encephalitis and syphilis. This is only a partial list of recognized sequelae, and this list may be greatly expanded as research in this area progresses.

Estimated annual cost of contagious illness includes 125 million child-days lost from school, about 200 million man-days lost to industry, and, by conservative estimate, an annual financial loss of three and a quarter billion dollars. These figures do not take into consideration unestimated expenditures for medical and professional treatment incurred by illness from communicable diseases. United States citizens spend more than one billion dollars each year on antibiotics alone.

In considering the current status of communicable diseases, those of importance today may be divided roughly into three categories according to the measures required for their control: (1) diseases which are controlled to such an extent that only surveillance is necessary, (2) those requiring more intensive application of known procedures, and (3) diseases for which adequate control measures have yet to be developed.

The first of these categories includes many once-dreaded killers which have been virtually eradicated in this country. As a result, our population, having been rarely exposed to these diseases, now has little or no naturally developed body defenses against them. Should an outbreak occur, it could flare into a large-scale epidemic bringing widespread disease and death. Therefore, although mortality and morbidity rates for these diseases indicate that they are at present of minor significance, they still require constant watching to guard against reintroduction or reactivation.

The second significant category of communicable diseases, those requiring more intensive application of known procedures, includes such familiar conditions as diphtheria, tuberculosis, trichinosis, and rabies. Effective procedures for the control and prevention of these diseases are known but are not applied to the extent necessary for effective control. Intelligent use of existing knowledge and development and improvement of technics, methods, and materials can bring about control of diseases in this group.

The third and largest group includes some rare and unfamiliar maladies, as well as such old faithfuls as measles and mumps. For each of these diseases, either the cause, satisfactory diagnostic procedures, or effective preventive practices are not yet known. Further study is necessary for adequate control. Although we may be relatively unfamiliar with many diseases in this category, it would be erroneous to assume that they are of little significance in this country. The current problems of leptospirosis, histoplasmosis, psittacosis, epidemic diarrhea of the newborn, and staphylococcal infections point to the need for more attention to this group.

The prevention and control of any communicable disease in man is dependent largely upon a knowledge of the etiologic agent, the source of the infection, the method of transmission, and the human host. These factors form the chain of infection.

Once knowledge of the pattern of infection is complete, the scientific approach to control of the disease is to determine the weakest link in the chain and the most effective methods of breaking the chain at that point. For example, we know that in plague the source is the best point of attack, and we promote rodent control; in smallpox the host is most amenable, and we practice vaccination. Malaria has been almost eradicated in this country by attacking the transmission link—the mosquito vector. Infectious hepatitis is a disease for which the etiologic agent has not been isolated; therefore current effort is directed toward identifying the cause.

Primary responsibility and authority

for public health is vested in the states. The first health departments were established primarily for the prevention and control of communicable disease. State disease control functions range from consultation and advisory services to the direct operation of complex state-wide programs.

During the last half century, much of the state's responsibility for public health services has been delegated to local health departments, while the state continues to supply technical advice, consultation services, and emergency assistance.

Since our early history as a nation, the federal government has necessarily assumed responsibility for communicable disease control in three broad functional areas: (1) preventing introduction of disease from abroad, (2) limiting the spread of disease across state lines, and (3) assisting states where health problems exceed state resources. As far as possible, federal activities for disease control are integrated with activities at state and local levels.

Nursing functions, responsibilities, and opportunities in the prevention and control of communicable diseases depend upon the type of agency in which the nurse is employed, the extent of the problem in her area, and her interest and her willingness to recognize and assume her responsibilities in the program. The official agency, for example, is legally charged with the control of disease. As designated representative of the health officer, the nurse in the official agency carries delegated responsibility and authority to determine the source of communicable disease and to prevent additional cases in the community. The degree of responsibility varies, the nurse in some instances functioning as a team member, in others, necessarily carrying the major role. In a voluntary agency the nurse's primary concern is care of the patient, but she, too, contributes to prevention and control through knowing, teaching, and practicing local regulations, and working with and supporting the official agency. Nurses in occupational and school health programs, hospitals, clinics, and physicians' offices share the opportunities for preventing and controlling disease, and for giving or helping to arrange for care of cases that do occur. If the patient is to have the best care, and the community adequate protection, there must be coordinated, cooperative effort among workers in the various services.

Let us take a closer look at some of the challenges for nurses in this field. In order to function effectively we must sharpen our awareness of existing and potential problems—we must be sensitive to things happening around us. What is the reported incidence of specific diseases? How many unreported cases does this probably represent? What is the potential spread? We have access to many sources of information to stimulate our interest and to build up a store of knowledge that will give us confidence in participating in the communicable disease control program: official reports, popular publications, news items, professional journals of nursing and allied disciplines, seminars, institutes, workshops, university courses, consultation, and cooperative projects with other staff members and with other agencies.

Once we have this awareness of the significance of communicable infections, we are in a position to help identify problems in our own work situations and to determine their seriousness. How does the local area compare with state and national incidence? Are there conditions locally which could lead to a large outbreak? Are the water supply and sewerage disposal systems adequate, for instance, to prevent a major epidemic of enteric infections which might be introduced from the outside? Are there animal and vector populations conducive to the spread of encephalitis?

Is the immunity level of the community sufficiently high to abort a threatened epidemic of poliomyelitis or diphtheria?

Planning of programs and service is a privilege which must be earned. When we have become cognizant of the existing and potential problems in our area and of the measures necessary to combat them—in other words, when we have equipped ourselves to make a worthwhile contribution—we have earned the right to participate in planning a control program.

An active part in executing the planned program is another opportunity open to the nurse. Education and training in the requisite sciences, experience in interviewing, and in developing interpersonal relationships, knowledge of her area, and community recognition of her functions make the nurse an ideal person to investigate cases and outbreaks of communicable disease in order to find the source of infection and to help in preventing other cases.

Concurrently with the epidemiologic investigation, the nurse is able to assist in caring for the patient and in instructing the family. She may give bedside care, demonstration care, or instructions for care. It may be necessary to help the family decide what is needed and to assist in arrangements. Communicable disease in the home presents a unique opportunity for teaching current and future protection of the family and of the community, as well as mental hygiene, nutrition, and many other phases of family health.

It has been said that professional relationships can be established or broken around a case of contagious disease. Probably more than any other one person, the nurse is the deciding factor in this situation. The physician, required by law to report certain diseases, will soon tire of this added chore unless he has evidence that his report is used productively. Masses of vital statistics stimulate little interest in the busy practitioner concerned primarily with the recovery of the individual patient. If the nurse can offer her services promptly upon receipt of the physician's report, however, and can prove to him that she has a worth-while contribution to make, he is usually more willing to report his cases, and to report them early enough to benefit from the nurse's service. Implied, of course, are that the nurse will consult him for diagnosis and working orders, advise him of findings, action taken, and plans for continued supervision. Through tactful approaches, interpretation, and effective service, the nurse can often influence the physician or hospital administrator most resistant to "health department meddling" to appreciate, respect, and utilize the services of the agency.

The satisfactions derived from active participation in a program for community protection against disease are second to none provided in nursing. Such a program offers opportunities for individual initiative, teamwork, interagency cooperation, and community effort. It includes patient care, isolation, and quarantine measures when indicated, prophylactic treatment in some instances, immunization, epidemiologic investigations and studies, improvement of the environment, and individual and group education.

Just as responsibility for planning must be earned by interest and preparedness, so must the privilege of being a part of the evaluation staff. Not only can the nurse appraise her individual accomplishments, but she can participate in evaluation of the agency program, revision of plans, and adaptation of activities to meet changing needs. Communicable disease control is only one facet of a multiservice program, and must be considered not only as a unit, but in relation to other community needs. The inexperienced nurse may be —and I might add, should be—shocked

at three cases of diphtheria in her district and without guidance may overemphasize the problem to the detriment of other vital services. A review of the over-all situation may reveal that while one case of diphtheria is too much, the three in question contracted their infection outside of the area, are under adequate medical supervision, and are not a threat to the fairly well immunized neighborhood, while neonatal deaths in the county are consistently much higher than the rate for the entire state, and the roster of children needing correction of defects which may lead to handicaps is almost overwhelming. At times, on the other hand, contagion may assume priority not because of the severity of the particular infection so much as because of the psychological time to promote long-term measures, improve relationships, encourage financial support for the agency, or initiate new services. Experience, maturity, and accurate information about her area fit the nurse admirably to appreciate the subtleties of such situations and to assist in arriving at sound decisions.

The goal of communicable disease control is the virtual elimination of deaths from communicable diseases. If the current downward trends of deaths from infectious diseases continue, the goal should be in sight by the year 2005.

Achievement of this aim is dependent upon continued, uninterrupted local, state, and federal teamwork in public health programs for communicable disease control, backed by adequate investigations and development—translation of knowledge into practice. Based on the assumption that the 1954-1955 fertility level remains constant, the U. S. Bureau of Census estimates that nearly two-thirds of the population, or 145 million, will be in the age group under 35 by the year 1975. This estimate indicates that there will be 50 million children under 10 years of age by that date. This young population, susceptible to all communicable diseases shortly after birth, will impose tremendous responsibility on the health facilities of this country. It will be incumbent upon private physicians and public health personnel to protect by every available method the three and a half to four million newborns entering the population each year.

Needs in communicable disease nursing are: scientific investigation and research to supply reliable current information, improved basic nursing education, supplementary training and experience, expert consultation and demonstration of procedures, and teamwork which results in adequate care and instruction for prevention and control.

If we nurses do not recognize and assume our obligations in the control of disease, the prerogatives that we now have will be lost to less qualified personnel. This has already happened in some instances. Can we be complacent in relinquishing our opportunities to (1) care for the sick individual, (2) teach the family, (3) protect the community, (4) develop mutually beneficial professional relationships, (5) represent our agency by professional service, and (6) derive personal satisfactions from providing the high level of professional performance our community has a right to expect?

Miss Lester is chief, Nursing Section, Epidemiology Branch, Communicable Disease Center, Public Health Service, Atlanta, Ga.

This paper was presented before the Public Health Nursing Section of the American Public Health Association at the Eighty-Sixth Annual Meeting in St. Louis, Mo., October 30, 1958.

Characteristic of the transition in the problem of the communicable diseases is the control of tuberculosis. Many new practices in providing patient services are being tried today and are shown as a symptom of progress.

CHALLENGE OF COMMUNICABLE DISEASE TODAY—TUBERCULOSIS CONTROL

M. Estelle Hunt, R.N., M.P.H.

THE SITUATION with regard to tuberculosis at the present time is an interesting one. With the fundamental changes in recent years a new epoch has opened that has brought with it an atmosphere of outstanding initiative and interesting speculation. Observation shows that many of the practices that have been accepted in the past as traditional are now being challenged and subjected to considerable scrutiny. The present stage is dominated by a great deal of independent thinking and imagination arising from attempts to adapt practices to the advancements that have been made since chemotherapy. Many new approaches are being tried. This can be seen in the wide divergence of practices in regard to:

1. The question of which patients should be hospitalized.
2. The variations in the duration of hospitalization.
3. The variations in the use of rest.
4. The variations in state plans in arranging for the gradual contraction of special tuberculosis hospitals.
5. The trend toward the modification of protective measures.
6. The increased importance of the tuberculin test.

For instance, in regard to the use of bed rest, we find at one end of the scale advocates of conservative practice who prescribe strict bed rest for a period of months and, at the other end of the scale advocates of liberal practices whereby, in minimal and moderately advanced cases, rest is left almost entirely to the discretion of the patient. The patient sets his own pace and makes his own decision to rest when he feels tired.

The picture in regard to duration of hospitalization and the criteria for discharge is equally varied. In some instances patients are still being hospitalized for as long as two years; while in other instances hospitalization may range from as little as three months to eight to 12 months. The patient is then discharged on drugs and supervision and continues treatment at home through the health department clinic or private physician.

In some hospitals patients are selected very carefully, both with regard to disease status and social status, before being discharged on drug therapy. Discharge under these circumstances is delayed until the disease is stabilized and characterized by negative sputum and closed cavities; while in other hospitals patients are discharged with active disease when their sputum is still positive. There is general agreement on the desirability of patients having negative sputum before discharge. But there is disagreement as to whether or not cavi-

ties must be closed prior to discharge. Then there are those programs where treatment is initiated outside the hospital and the patient is not hospitalized unless untoward symptoms develop.

Although these illustrations suggest the wide variations in patterns of hospitalization and the tremendous interest in trying out new approaches in providing therapy, I do not want to imply that factors such as extent and recency of disease do not still play an important part in determining the duration of hospitalization and the point at which the patient is discharged. These factors, of course, are of utmost importance.

The question of how best to apply protective measures for the care of patients with tuberculosis, whether in the home, general hospital, or sanatorium, is also under scrutiny. Current practices range from the very conservative, strict technic whereby everyone coming in contact with the patient wears a mask and gown to the extremely flexible practices where each individual applies protective measures as she or he feels fit. For all intents and purposes the latter practice may result in having no technic at all. At the present time practices are being reexamined. The trend seems to be toward giving increased emphasis to the active communicable case where protective measures are needed most and modifying or eliminating other measures where they are not needed.

Another difference is seen in case finding. Recognizing the limitations to the use of the chest x-ray in case finding, because of the changes in tuberculosis and the radiological health problem, case-finding programs are being reassessed. Emphasis is being placed on the selection of groups which are expected to show a high yield, the careful selection of the initial test to be used—whether it be chest x-ray or tuberculin skin testing—and on limiting the volume of testing to the point where continuing follow-up can be done adequately, so that persons are brought to needed medical attention. Tuberculin testing is useful in selected instances, but at the present time it cannot be considered an alternate method of case finding.

Recent years have seen a changed attitude about the use of hospitals for tuberculous patients. The trend is away from the small isolated tuberculosis sanatoria. The aim is toward the coordination of hospital services. Developments along these lines are seen in some of the existing state plans. As one would expect, these plans vary widely and reflect the needs of the communities served. For instance, in one of the northwestern states the trend is toward closing the small sanatoria and focusing on one specialized tuberculosis hospital to serve the entire state. In some of the New England states the pattern is to maintain the sanatoria. But these sanatoria also accommodate patients with other pulmonary conditions and certain forms of chronic diseases. Veterans Administration Hospitals represent still another trend where increasingly more patients with tuberculosis are being treated in the departments of the general hospitals.

The point worth remembering is that no matter what plan is adopted, there is need for an organized state plan so that tuberculosis patients can be provided hospitalization as needed.

Now in regard to nursing, it follows quite naturally that all these changes and variations in practice are bound to influence nursing in one way or another. These can be confusing times and cause many frustrations unless we recognize and accept the fact that in the field of tuberculosis we are going through a period of speculation and are trying new approaches in an effort to find out what the best practices should be.

I believe that this does not require nursing to strike out into any new and different activities or different kinds of duties. But, rather, it requires that we

reconcile our services to the changes that are occurring. In this respect three considerations are of utmost importance:

1. One is that, somehow or other, through inservice programs or formal education, reading, or other means, we must acquire an understanding of what is going on in regard to present practices and programs. The bits and pieces of evidence showing the initiative that is being taken in the development of new practices are lying all around us. But, to be significant they should be pieced together so that we understand the reason for, and the place of, each specific practice in the long-term process of program development.

2. A second consideration is that we must break through the barriers that are blocking communication, whether it be within agencies, or between health departments and hospitals, or physicians in private practice. One of the greatest stumbling blocks is that nursing does not have the necessary detailed information about the individual patient's condition. However, we should not be discouraged. At the present time, considerable thought is being devoted and various administrative arrangements are being made to give support to improved referral systems; numerous ad hoc committees and integrating committees are being organized to concentrate on ways of bridging the gap between the various services patients are receiving.

3. A third consideration is that nursing itself must identify the modifications needed within nursing so that practical means can be adapted to give weight to those services and aspects of nursing education needing emphasis.

I would like to close by saying tuberculosis remains the number one communicable disease problem in this country. In a broad way I have tried to point out some of the new approaches being used, the initiative being taken in improving patient care, and hopefully I have indicated some of the implications for nursing. The important thing to remember is that we are continuing to move toward great events in the field of tuberculosis.

Miss Hunt is chief nurse, Tuberculosis Program, Division of Special Health Services, Public Health Service, Washington, D. C.

This paper was presented before the Public Health Nursing Section of the American Public Health Association at the Eighty-Sixth Annual Meeting in St. Louis, Mo., October 30, 1958.

Despite gains made in venereal disease control over the past fifteen years, problems in this area still remain. The nature of these problems and what the public health nurse may be able to contribute to their solution is the theme of this paper.

CHALLENGE OF COMMUNICABLE DISEASE TODAY—VENEREAL DISEASE CONTROL

E. Alice Clark, R.N., M.A., F.A.P.H.A.

WHY ARE WE CONCERNED about venereal disease control today? Is this a current communicable disease problem? Let us take a look at some of the facts. The use of penicillin in the treatment of syphilis was first discovered in 1943. The result of this new method of treatment revolutionized venereal disease control. In 1946, when the drug became generally available a whole new pattern of control, including vastly improved case-finding procedures, was under way. The peak of the nation-wide syphilis epidemic was reached in 1946-1947, thereafter the decline in syphilis case rates was steady and rapid. This downward trend was comparatively steep and consistent over the entire eight-year span between 1947 and 1955 then became less pronounced and leveled off during 1955. The case rates of new syphilitic infections declined 94.6 per cent between 1947 and 1955.

At first glance the statistics would lead one to assume that this denotes overwhelming success and that syphilis could now be added to the list of communicable diseases which are no longer considered to be a public health problem. However, when we look at the trends over the past five years the number of cases reported seems to be more or less static. A plateau appears to have been reached. In 1958 reported cases of primary and secondary syphilis showed a slight increase in the United States while early latent and total syphilis showed a decline.

Twenty-three states showed increased primary and secondary syphilis cases in 1958 and 19 states showed increases in late latent syphilis. Cases of latent syphilis represent case finding more than four years after the primary and secondary stages of the disease; this means a failure of case finding in the past. To prevent the spread of a communicable disease it is essential that the case be found early while in the infectious stage. The trend of reported cases of venereal disease must be interpreted with caution since fluctuations in the number of reported cases may be due to fluctuations in case-finding activities. Decreasing case-finding efforts are reflected in the reported morbidity data as well as changes in incidence and prevalence. If cases are not found and reported there is no apparent problem.

How Does the Problem of Venereal Disease Compare with the Other Communicable Diseases?

Gonorrhea and syphilis still rank second and fourth, respectively, among notifiable diseases in the United States.

Gonorrhea is exceeded in number of reported cases only by measles. Next in rank are the streptococcal infections and then syphilis. As a matter of fact, the venereal diseases comprise more than half of the total adult communicable diseases reported in this country each year.

Reservoir of Infection

In addition to the reported incidence of cases of syphilis and gonorrhea each year, public health workers are also concerned with finding and bringing to treatment the estimated 1.8 million persons in the United States with undiscovered or inadequately treated syphilis. These individuals are potential candidates for chronic illness and premature death. Studies have shown that untreated syphilis reduces life expectancy by approximately 17 per cent.[1] If we assume the responsibility for maintenance of health and prevention of premature disability and death, it is apparent that there remains a large backlog of work still to be done in venereal disease control.

Economic Losses

The economic losses of uncontrolled syphilis are still a major component in the over-all venereal disease problem. As recently as 1955 there were 33,000 persons in mental institutions in this country because of syphilitic psychoses at a direct cost of maintenance of $46,684,000 per year.[2] We continue to institutionalize paretics at the rate of about 1,200 new admissions per year. This cost for illness does not include the other disabling conditions or chronic diseases due to syphilis.

What About Age of the Venereal Disease Patient?

Gonorrhea and syphilis are diseases of young people. Today more than half of the total infectious cases of venereal diseases reported are in the teen-age and young adult groups. Statistical data show that venereal disease rates begin an almost vertical rise in the age group from 13 to 20. During 1957, 49,484 cases were reported in persons under 20 years of age. This represents 22.38 per cent of the total cases reported during the year.[3] Last year nearly half of the persons involved in venereal disease epidemics were teen-agers. However, this age group represents only 13 per cent of the total population. The significance of the venereal disease problem among teen-agers assumes particular urgency when it is realized that by 1960 more than 30 million of our population will be between the ages of 10 and 19, representing an increase of 40 per cent over the number in this population group in 1950.[4] The increase in infectious venereal disease among teen-agers may be associated with juvenile crime, sex delinquency, and illegitimacy which has recently been of so much concern.

According to the National Office of Vital Statistics, "The illegitimacy rate per 1,000 unmarried women aged 15-44 rose from 7.0 in 1938 to 20.2 in 1956, nearly a threefold increase in 18 years. In 1956, approximately 193,500 births were registered as births to unmarried women."[5] Many of these unmarried mothers were children themselves. Approximately 40 per cent of the illegitimate births were in the group under 20 years of age.

What Are Some of the Sources of Spread of Venereal Disease in a Community?

The potential for spread of venereal disease (promiscuity) is present in every community. All that is necessary for these diseases to spread is the presence of a promiscuous person in the infectious stage of the disease. Unlike many other

communicable diseases, specific control measures do not exist. There is no immunizing agent. There is no intermediate host or vector which can be eradicated.

Fifteen or 20 years ago it was thought that prostitution was the major factor in the spread of venereal disease. Recent studies show that in the United States prostitution is now responsible for no more than 5-8 per cent of fresh venereal disease infections. The casual relationship or "pick-up" accounts for 50-60 per cent of infections acquired. Somewhere around 25-30 per cent are accounted for by more or less steady relationships short of marriage, and the remainder are familial in which the husband or wife transmits the disease to the marital partner.[6]

Changes in Control Programs

Changing needs in venereal disease control necessitate changing emphases in public health programs. As each new development in control methods becomes available and applied in practice, readjustments in programs become necessary. During a span of a few short years we have moved from inpatient, rapid treatment centers to the one "shot" outpatient treatment schedule. The number of public diagnostic and treatment facilities decreased as the venereal disease problem diminished. As these facilities closed, the private physician assumed an increasingly important role in venereal disease control. In 1958 almost 40 per cent of the total reported cases of early syphilis and about 17 per cent of the total cases of gonorrhea were reported by private physicians.[7] This presents a problem in epidemiology. It is estimated that only about 5 per cent of these patients are interviewed for sex contacts and field investigations made to get persons exposed to the infection under medical supervision. This gap in venereal disease epidemiology poses one of the most urgent problems in today's venereal disease control programs. Physicians in private practice are busy and lack the time to interview patients for contact information. Therefore, in order to break the chain of infection it is necessary for the health department to provide epidemiologic services for these diseases, the same as for other major communicable diseases which occur in the community.

What Significance Do These Changes Have for Nursing Education and Nursing Service?

The big problem facing health departments today is how to adjust programs to meet current needs. In many areas where incidence and prevalence rates are low it is economically impractical to maintain specialized services. However, we know that if we are to maintain the gains that have been made and to continue to reduce the number of new infections there must be constant surveillance and continuous application of available control measures. Special emphasis must continue to be placed on case finding in selected population groups in high-incidence and high-prevalence areas.

There is need for progressive integration of venereal disease into the overall communicable disease control program and the total community health service. It is evident that the major problem in early infectious venereal disease is more in the teen-age and young adult group. Many of these children are of school age, especially those of lower socioeconomic status, and many are children who have reached the age of leaving school and who may be in the community but not yet at work. Measures to control venereal disease in this group should be of vital concern to parents, public health officials, and educators. Public health nurses should give high priority to this communicable

disease problem in the family and school health services. In order to meet changing needs the generalized nursing service will more and more be called upon to assume responsibility for venereal disease control. In many agencies policies and functions have been clearly delineated and the nursing staff includes venereal disease epidemiology as a part of the total nursing service. In other agencies, where the venereal disease program has been a specialized service during the years of high incidence, plans are being developed to include these services in the total communicable disease control program.

Venereal disease problems in a family health service are identical with other health problems within that service except for those procedures and technics which are determined by the disease itself. To deal effectively with these problems the nurse uses her knowledge and skill in applying the basic principles of professional interviewing, case finding, epidemiology, and health teaching.

It is obvious that if the nurse is to carry out her functions in venereal disease control her activities must be based on a sound knowledge of the medical, public health, and epidemiologic aspects of venereal disease. It is essential that she appreciates that the patient with a venereal disease is as much in need of medical and nursing care and understanding as one with poliomyelitis or tuberculosis.

Nurse educators, consultants, and supervisors are increasingly asking for assistance in preparing nurses to carry out their functions in giving service to individuals and families in this area of communicable disease control.

REFERENCES

1. Shafer, J. K.; Usilton, Lida J.; and Gleeson, Geraldine A. Untreated Syphilis in the Male Negro. Pub. Health Rep. 69,7:684-690 (July), 1954.
2. Venereal Disease Fact Sheet. Atlanta, Ga.: Venereal Disease Branch, Communicable Disease Center, Public Health Service, 1957.
3. Annual Report. Atlanta, Ga.: Communicable Disease Center, Public Health Service, 1958.
4. Children and Youth—Their Health and Welfare. Washington, D. C.: Children's Bureau Publ. No. 363, 1957.
5. Indicators. Washington, D. C.: Office of Program Analysis, Public Health Service (Aug.), 1958.
6. Fiumara, Nicholas J. Venereal Diseases—Present and Future. A.J.P.H. 43:1443-1451, 1953.
7. Annual Report. Atlanta, Ga.: Venereal Disease Branch, Communicable Disease Center, Public Health Service, 1958.

Miss Clark was chief nursing consultant, Venereal Disease Branch, Communicable Disease Center, Public Health Service, Atlanta, Ga., when this paper was given. She is now regional nursing consultant (Region IV), Atlanta.

This paper was presented before the Public Health Nursing Section of the American Public Health Association at the Eighty-Sixth Annual Meeting in St. Louis, Mo., October 30, 1958.

A new public health problem in India is described in the following account. This is Kyasanur Forest Disease, a tick-borne virus disease, which affects man and certain wild monkeys and was first recognized in 1957.

VIROLOGICAL EPIDEMIOLOGY OF THE 1958 EPIDEMIC OF KYASANUR FOREST DISEASE

Telford H. Work, M.D., M.P.H., F.A.P.H.A.; F. R. Roderiguez, M.B.B.S.; and P. N. Bhatt, M.P.H.

AN IMPORTANT new public health problem in India was recognized in March, 1957, when Kyasanur Forest Disease (KFD) was first described in Shimoga District of Mysore State.[1-3] The infected area is situated just under 2,000 feet elevation in the eastern foothills of the Western Ghats in Mysore as shown in Figure 1. The area is about ten miles square and receives an annual rainfall varying from 30 to 80 inches east to west, according to locality. The general terrain is hilly, covered by intermittent tropical evergreen and deciduous forest which is contiguous north and south for hundreds of miles along the Western Ghats. The forest is interspersed with open, low-lying areas where rice and other crops are cultivated. Villages are usually situated adjacent to the forest at the edge of cultivated areas.

Large numbers of wild monkeys of two species, black-faced Presbytis entellus and red-faced Macaca radiata, inhabit the forest. It was from blood of a Presbytis entellus found moribund in Kyasanur Forest that the first isolation of KFD virus was obtained. Accounts of investigations which defined the etiology and epidemiology of KFD have already been published.[4]

Although caused by a tick-borne virus of the Russian spring-summer (RSS) virus complex, usually associated with central nervous system disease in man,[5] KFD manifests itself as a hemorrhagic fever in more severe cases.[2] As yet, no direct involvement of the human CNS by the virus has been observed, and the disease appears to be very similar to Omsk hemorrhagic fever of Siberia described by Chumakov.[6,7]

Clinical Features

The disease is characterized by a sudden onset of fever and/or headache five to eight days after forest exposure. This is followed shortly by severe pains in the neck (meningismus), low back, and extremities, accompanied by severe prostration and marked inflammation of the scleral and palpebral conjunctivae. An important diagnostic sign in some patients is a papulo-vesicular eruption on the soft palate. Vomiting and diarrhea frequently occur two or three days after onset. Hemorrhagic signs such as bleeding gums, epistaxis, hemoptysis, hematemesis, melena and frank red blood in the stools appear at this time. The fever lasts from five to 14 days with an occasional febrile exacerbation in the third week. Convalescence is prolonged.

No changes have been detected in cerebrospinal fluid. There is invariably

Figure 1

a marked leucopenia with an accompanying thrombocytopenia. Beginning about the fourth day and lasting for the duration of fever, granular casts and red cells may appear in the urine. Death occurs usually in the second week and results from hemorrhagic complications; either oozing of blood into the lungs as a precursor to pneumonia or massive exsanguination into the gastrointestinal tract. Post-mortem histology has shown focal necrosis in the liver and sloughing of tubular epithelium in the kidney.

Diagnosis

KFD virus has been observed to circulate in the blood from two days before until as long as ten days after onset of the disease. The virus is remarkably stable in blood serum and is easily isolated by intracerebral inoculation into infant or adult mice. Isolation of virus from blood collected during the acute phase of illness has been the most frequent laboratory substantiation of a clinical diagnosis. Complement-fixation tests using suspensions of first passage mouse brains as crude antigens against standard immune serums provide an early identification of the agent. This often gives a laboratory diagnosis before a convalescent serum specimen showing an increase in specific antibodies can be collected. Some cases seen for the first time late in the illness were diagnosed exclusively by serology.

Epidemiology in 1957

Investigations which led to description of Kyasanur Forest Disease and established an RSS viral etiology were begun by the Virus Research Centre late in March, 1957, almost three months after the first cases of that year had been reported as enteric fever. Retrospective serological diagnosis of these cases and increasing efficiency in laboratory diagnosis of cases reported in April, May,

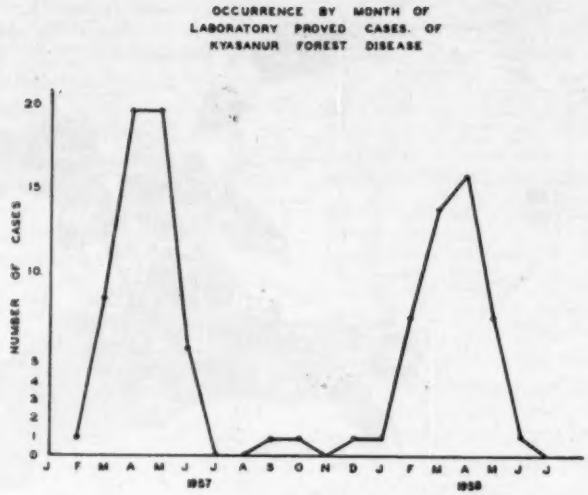


Figure 2

and June provided data indicating a seasonal incidence of human cases as shown in Figure 2. Soon after onset of the monsoon rains early in June, human cases of KFD ceased, probably because of the change of activity of the tick vectors within the forest and the fact that during the heavy rains the villagers spend little time in the forest and engage instead in the cultivation of rice in open fields outside the forest. It is important to note that the period from January to June is the spring and summer season in this part of India, and that in these months the ticks are at maximum activity.

Because the 1957 epidemic obviously terminated with the onset of the annual monsoon rains in June and another began at the end of the monsoon season, the epidemic year was defined as beginning in September and ending in August. Hence, data concerning virus isolations (Table 1) and cases diagnosed (Figure 2) are presented in this manner.

The mortality rate in the 1956-1957 epidemic of almost 500 reported cases was approximately 10 per cent. A number of reported cases were proved in the laboratory not to be KFD, but it is probable that under the circumstances of incomplete epidemiological coverage prevailing at that time at least as many genuine cases were not reported. The

Table 1—Isolations of Kyasanur Forest Disease Virus from Human Patients, Wild Monkeys, and Haemaphysalis Ticks

Period / Source	1957 Epidemic						1957-58 Epidemic											Total
	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	
Human Serum	2	9	14	4	0	0	1	1	0	0	0	5	8	9	7	1	0	0	61
Wild Monkeys	3	0	1	1	0	1	0	0	0	0	1	1	0	2	1	0	0	0	11
Haemaphysalis ticks	2	0	0	0	2	8	4	0	0	0	0	0	0	0	0	0	0	0	16
Total	7	9	15	5	2	8	5	1	0	0	1	6	8	11	8	1	0	0	88

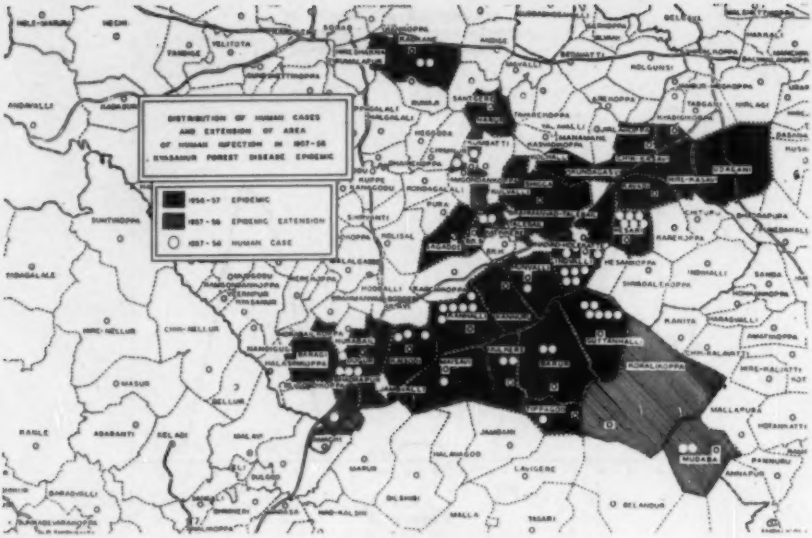


Figure 3

situation was especially serious in that the disease occurred predominantly in young adult males who were actively engaged in forest occupations on which families and villages were dependent. The large number of young adults afflicted with such a prolonged, prostrating disease constituted a serious loss of manpower during the pre-monsoon season when stocks of firewood and building materials were being collected and fields prepared for the one crop of rice cultivated each year during the monsoon season, June to October.

Epidemiological investigations established that the disease had not affected man or monkeys in the presently known infected area prior to December, 1955. During the first epidemic season, January through April, 1956, not more than four villages were affected. In 1957, however, more than 20 villages were affected, a demonstration of the rapid spread of the infection. The black area in Figure 3 encompasses these villages.

Dead monkeys were found in the human epidemic and adjacent areas throughout the year. KFD virus was isolated from dead monkeys autopsied in the forest in March, May, June, and August, 1957.[8] The virus was also isolated repeatedly from Haemaphysalis ticks—at least ten strains from H. spinigera—collected in Kyasanur Forest.[8,9] Ticks of this genus, including large numbers of H. spinigera, were taken from monkeys and birds collected in and around the known infected forest areas. Serological studies showed that a substantial percentage of certain species of rodents contained specific neutralizing antibodies to KFD virus, while serum specimens from the same species collected outside the area were entirely negative.

By the end of 1957, accumulated data provided evidence that: (1) there had been a recent introduction of an RSS tick-borne virus into a forested area of Shimoga District, (2) the virus caused a new and fatal disease of indigenous human beings and monkeys, (3) there

was rapid extension of the infection to new localities where human beings were being infected, (4) Haemaphysalis spinigera ticks, which feed commonly on monkeys and birds as well as man, were infected and appeared to be the vector, and (5) antibodies in rodents indicated a separate, nonprimate cycle by which the infection might be not only maintained but also spread. It was, therefore, imperative to intensify epidemiological studies in man and, secondarily, in monkeys, ticks, and other vertebrates during the 1957-1958 spring and summer season to determine how fast, how far, and in what direction the infection would spread as an index to the size of the public health problem that KFD might become.

1958 Epidemic

In April, 1957, a field laboratory had been established in Sagar by the Virus Research Centre for collecting, processing, and transmitting human, primate, rodent, avian, and arthropod specimens to the main laboratory in Poona. Specimens were collected primarily by medical, entomological, zoological, and subsidiary personnel of the VRC staff in close collaboration with Dr. D. P. Narasimha Murthy, medical officer of health of the Sagar Secondary Health Centre; Dr. Prasenna Iyengar, Ulavi Primary Health Centre medical officer; Dr. R. Laxmana Rao, assistant surgeon of the Combined Hospital in Sagar; and Dr. Riaz Ahmed, medical officer of health, Sorab Secondary Centre, who received reports of suspected cases through hospitals, dispensaries, and a staff of health inspectors. The VRC staff worked in close collaboration with the Mysore government medical and public health officers in collecting specimens and following up reports of dead monkeys. In turn, they reported to the Mysore officials new cases discovered in the course of these field investigations.

In January, 1958, the VRC medical and field staff in Sagar was augmented to intensify investigation of reported KFD cases and wild monkey deaths. Although the outbreak reached epidemic proportions later than anticipated, the activity of these field personnel was efficient enough to establish the diagnosis in 32 of 51 cases studied by virus isolation, as described earlier in this presentation.

Table 1 shows the incidence of virus isolations by month. It is apparent that the disease again affected the forest villagers seriously. The incidence of infections in children, teenagers, and old people was greater than in the 1957 epidemic, owing probably to a greater number of immunes in the most highly exposed middle-age group.

KFD virus was isolated in January, February, April, and May of the 1958 epidemic from wild monkeys found dead in the infected area. The simultaneous epizootic in monkeys indicates that the monkeys are valuable sentinels and could provide a mechanism for spread of the infection to new localities as in sylvan yellow fever. However, antibody studies failed to demonstrate neutralizing antibodies in serums of healthy monkeys collected anywhere outside this epidemic area. A significant incidence of KFD-positive monkeys within the epidemic area showed that many monkeys survive the infection, an observation supported by experimental infection in the laboratory. Study of the entire experience of virus isolation from human, monkey, and tick hosts from March, 1957, through August, 1958, indicates that, within limitations of the collecting technics, virus was recovered in almost every month and must therefore have been permanently established in the area.

Allowing for greater efficiency of collecting and serological follow-up in the more intensive epidemiological coverage in 1958, the actual number of cases was fewer than in 1957, although curves for

laboratory proved cases in the two epidemics in Figure 2 appear to be similar. It should be noted that there is an earlier cessation of cases in 1958; cases are diminishing in April and have ceased by the end of May. This pattern was the result of unseasonal rains early in April, which produced monsoon conditions about six weeks earlier than in 1957 and were thus a major factor in limiting the number of cases in 1958. There were 466 reported cases in 1957 compared to only 181 in 1958 and the mortality rate dropped from 10 to 3 per cent.

Figure 3 provides the most important information resulting from locating the laboratory proved cases of 1958 on a map of the area known to be infected in 1957. Almost all cases occurred in the previously infected area. However, it is important to note that the cases occurring in new, adjacent areas were found early in the season. It is obvious that the rapid spread of 1957 did not continue in 1958, aborted in part, perhaps, by the early rains. The occurrence of significant numbers of cases in 1958 in the 1957 epidemic area is further evidence that the infection is well and probably permanently established in that region and will continue to be a threat to nonimmune, unprotected persons exposed in the infected forest areas.

What factors, beyond change in temperature, humidity, and rainfall, contribute to a rapid extension in one year and limited extension in another are unknown but determination of these factors is the object of long-term field investigations which are continuing.

REFERENCES

1. Work, T. H., and Trapido, H. Summary of Preliminary Report of Investigations of the Virus Research Centre on an Epidemic Disease Affecting Forest Villagers and Wild Monkeys of Shimoga District, Mysore. Indian J. M. Sc. 11:340–341, 1957.
2. Work, T. H.; Trapido, H.; Narasimha Murthy, D. P.; Laxmana Rao, R.; Bhatt, P. N.; and Kulkarni, K. G. Kyasanur Forest Disease III: A Preliminary Report on the Nature of the Infection and Clinical Manifestations in Human Beings. Ibid. 11:619–645, 1957.
3. Narasimha Murthy, D. P. New Virus Disease—Kyasanur Forest Disease. J. Indian M. A. 31:125–126, 1958.
4. Work, T. H. Russian Spring-Summer Virus in India—Kyasanur Forest Disease. Progr. Med. Virol. 1:248–277. Karger, Basel/New York, 1958.
5. Smorodintsev, A. A. Tick-Borne Spring-Summer Encephalitis. Ibid. 1:210–248. Karger, Basel/New York, 1958.
6. Chumakov, M. P. K Itogam Ekspeditsii Instituta Nevrologii Po Izucheniiu Omskoi Gemorragicheskoi Likhoradki (OL) (Results of the Study Made of Omsk Hemorrhagic Fever (OL) by an Expedition of the Institute of Neurology). Vestn. Akad. Med. Nauk. 2:19–28, 1948.
7. ————. Tick-Borne Hemorrhagic Disease in the U.S.S.R. Proc. VIth Int. Cong. Trop. Med. & Mal., Lisbon. (To be published.)
8. Bhatt, P. N.; Work, T. H.; Varma, M. G. R.; Trapido, H.; Narasimha Murthy, D. P.; and Roderiguez, F. R. Kyasanur Forest Disease IV: Isolation of Kyasanur Forest Disease Virus Strains from Infected Human Beings and Monkeys of Shimoga District, Mysore State. (In preparation.)
9. Trapido, H.; Rajagopalan, P. K.; Work, T. H.; and Varma, M. G. R. Kyasanur Forest Disease VIII: Isolation of Kyasanur Forest Disease Virus from Naturally Infected Ticks of the Genus *Haemaphysalis*. Indian J. Med. Res. (In press.)

Dr. Work was director, Indian Council of Medical Research Virus Research Centre, Poona, India, 1955-1958, and now is staff member, Rockefeller Foundation, New York, N. Y. Drs. Roderiguez and Bhatt are assistant research officer and research officer, respectively, Virus Research Centre, Poona, India.

This paper was presented before the Epidemiology Section of the American Public Health Association at the Eighty-Sixth Annual Meeting in St. Louis, Mo., October 30, 1958.

Here is a description of the methods by which the Health Insurance Council collects information on the extent of voluntary health insurance in the United States.

THE MEASUREMENT OF VOLUNTARY HEALTH INSURANCE COVERAGE IN THE UNITED STATES

David Robbins, M.P.H.

MORE THAN four billion dollars—a rate of about 11 million dollars per day—of the nation's health care bill will be paid this year through voluntary health insurance programs. With more than 123 million Americans owning some form of this protection, some seven out of each ten persons in the country, a significant portion of our population shares in these benefits.

The statistics just cited, along with other related data on the extent of voluntary health insurance coverage in the United States, are published each year by the Health Insurance Council. This annual survey, now in its 12th year, has generally become accepted as an authoritative source for information with respect to the manner in which Americans choose to finance their health care costs. Statistics from this study are used by various government agencies to develop related research. The data have been quoted in medical, hospital, labor and industry circles, and use is often made of this information before legislative bodies.

In view of the prominence these data receive, it was felt that an account should be given of the method employed in their development. Those engaged in medical economic research, in particular, may find the technics described of use both in evaluating the published results, as well as in utilizing certain phases for their own investigations.

A brief history of the survey is first in order. In 1946, at one of the early meetings of the Conference Committee on Health Insurance, the predecessor of the Health Insurance Council, with representatives of the medical profession, the insurance people spoke of "the considerable" extent of health insurance coverage. The doctors indicated that they had heard a lot of generalities on this subject and would like to know just how many people were covered. Out of this meeting there came an understanding that the insurance industry would develop some statistical data on the extent of health insurance coverage.

The beginnings were, necessarily, crude. Since no single trade association, at that time, represented a significant proportion of the business, the United States Chamber of Commerce was asked, in 1947, to sponsor a survey of the number of persons covered under individual accident and health insurance policies.[1] The numbers insured through group insurance programs had already been developed since 1940 by the Equitable Life Assurance Society[2] and, com-

mencing with 1945, this information was being assembled by the Life Insurance Association of America.[3] For an indication of the scope of coverage through Blue Cross and Medical Service Plans, use was made, in this early period, of the estimates developed by Dr. Louis S. Reed, then with the U. S. Public Health Service.[4] The results of these various undertakings were assembled to provide a measure of the extent of health insurance coverage through voluntary means.

While data for these early years were based upon the best available sources of that period, they were less scientifically founded than are the statistics for recent years. Data for the Blue Cross and Medical Society Plans, prior to 1946, for example, are undoubtedly understated.[4]

In 1948, the insurance industry organized the Health Insurance Council. This federation of insurance associations[5] functions as the insurance industry's representative in activities with hospital and medical people with the underlying objective of making health insurance coverages more serviceable and effective to the public.

With the formation of the council, through its constituent associations, facilities in terms of both a full-time technical staff as well as appropriate machinery became available for the first time. By this means, effective coordination of the component parts of the survey was achieved and scientific accuracy assured.

Today, the annual survey of the Extent of Voluntary Health Insurance Coverage in the United States is, essentially, a coordinating effort. Data from three separate annual studies are put together by the council staff. The three studies are:

1. the extent of coverage as provided by insurance companies—these data are developed directly by the council staff;

2. the extent of coverage as issued by Blue Cross, Blue Shield and Medical Society approved plans—such statistics are assembled by the Blue Cross, Blue Shield, and the Council on Medical Service of the American Medical Association and totals, by plan, are forwarded to the council; and

3. the extent of coverage as available from other types of plans without either of the two previously cited affiliations—the so-called independent plans. These data are assembled by the Division of Program Research of the Social Security Administration and also transmitted to the council.

Coverage Provided by Insurance Companies

In view of the fact that coverages, as provided by insurance companies, are collected directly by the council staff, this aspect of the survey will be described first.

In January of each year, two comprehensive questionnaires are directed by the constituent associations of the council to all insurance companies in the United States which are actively underwriting accident and health insurance. The Health Insurance Council maintains a census of the number of such companies on a current basis, with the latest count numbering approximately 700. One questionnaire deals with health insurance as written on a group basis and the other with policies sold to individuals and families. The fine points of these questionnaires need not be gone into in detail here.*

The universe for the survey is constructed on two related bases. The first consists of the aforementioned current census of companies and the second refers to the total accident and health insurance premiums written in the United States. Insurance companies, as well as medical indemnity corporations like Blue Cross, are required by law to file an annual statement with the Insurance

* Persons interested in examining the specific questionnaires used in this survey may obtain copies from the author (Health Insurance Association of America, 750 Third Ave., New York 17, N. Y.).

Department of the state in which they are domiciled. Such statements contain statistics on written premiums as well as other fiscal matters. Compilations of these annual statement data appear in various trade publications[6] and these are utilized in the development of the universe.

As with all surveys conducted by mail, the first and perhaps most important concern is the response rate—in terms of both adequacy as well as representativeness of the data. Fortunately, the response rate to this survey has always been high—so high in fact, that relatively little emphasis has had to be placed upon the possible bias which might result from the unavailability of data among the relatively few nonrespondents.

The high response rate of this survey, (this year it was approximately 86 per cent of the premiums written) is due, largely, to the interest of most insurance companies in measuring how effectively they are fulfilling their responsibility of extending voluntary health insurance to all segments of the public. Parenthetically, we have found it particularly helpful in further increasing the rate of return, to forward to each company, along with the survey forms, a copy of the previous year's printed study. Apparently the physical evidence of the end product of a study is an excellent incentive toward participation.

What about the nonrespondents? Again we have been fortunate in that we are not without some knowledge of this group of companies. Various trade publications[6-8] contain information concerning the types of coverages and specific lines in which each insurance company is engaged. At the very least, there is information available on the amount of premiums which these companies write. Based on a knowledge of the established relationship between premiums written and persons covered among the reporting companies, together with a knowledge of the kinds of coverages offered and premiums written by the nonreporting companies, conservative estimates of the number of people covered by the nonreporting companies are developed. This technic involves a segmentation of the nonrespondents by size, type of business, and other significant variables. The procedure is reviewed each year—particularly the receipt of returns from those companies which may not have previously responded. Such checks ordinarily indicate that the estimates previously constructed for a particular company are well within the sampling error range of an actual return.

As has been indicated, questionnaires are distributed in January. As returns come in, they receive the usual editing and processing of mail surveys. Questionnaires are verified for internal consistency and reasonableness and are checked against the returns of previous years for trend regularity. Any unusual departure, or apparent arithmetic error, is followed up with the individual company by mail, telephone, or personal visit.

The questionnaires call for data on the number of persons covered against hospital expenses, surgical expenses, nonsurgical basic medical expenses, major medical expenses, and loss of income. Each of these totals, with the exception of loss of income which protects the wage earner only, is in turn segmented into those covered as primary insureds and those with protection as dependents of the insureds. The data are also distributed by state within the United States.

For the relatively few companies which are unable, from their records, to determine the specific number of dependents covered along with the number of family units, we use a factor of 2.45. In other words, the number of families covered (information most usually maintained in an insurance company) is

blown up by this factor. The ratio is based on observance of the relationship of family units to dependents among those companies which provide such data. It might be noted that current U. S. Census data on family size are of the same order of magnitude and a recent study of the Society of Actuaries[9] indicated a ratio of 2.44 for 1956. It is felt therefore that this procedure is reasonable.

In some instances, insurance companies can provide data on numbers protected nationally but are unable to distribute these data on a state or regional basis. For such returns, resort is again had to the established relationship between written premiums and persons covered. That is, observed national totals on persons covered are distributed by state according to the amount of the premiums written in each state relative to the total premiums written for the entire country.

Second to the response rate, another point of concern in data of this type is the possibility of counting the same person twice—the so-called duplication problem. Because of the increasing availability of voluntary health insurance in recent years, a certain proportion of the United States population has acquired protection from more than one insurance company or may have two contracts with the same company. They may also be protected by Blue Cross or Blue Shield or through one of the independent plans. For example, a man and his family may be insured through a group insurance program at his place of employment. In addition, the same man may have chosen to supplement the benefits provided by his group insurance with an individually purchased contract. Thus, at the end of 1957, there were 48,439,000 persons covered for hospital expenses through group insurance programs of insurance companies and 28,673,000 with individual-policy coverage. In total, therefore, there were 77,112,000 policies in force with insurance companies for hospital expense protection. The net total of persons covered by insurance companies, however, amounted to 70,192,000. The technics employed in eliminating this duplication, as well as the duplication resulting from the ownership of coverage with two kinds of insuring organizations, is described below.

Coverage Provided by Blue Cross, Blue Shield and Medical Society Plans

Through a cooperative arrangement with the Blue Cross Commission, the Blue Shield Commission, and the Council on Medical Service of the American Medical Association, the Health Insurance Council receives data each year on the extent to which people have protection through these facilities. The Blue Cross Commission, for example, receives a quarterly report from each of its recognized plans. Such reports contain fiscal information as well as data on the number of subscribers and dependents currently enrolled. The American Medical Association conducts a survey on an annual basis of enrollment under medical society sponsored or approved plans. The results of these surveys and reports are forwarded to the council. A careful trend analysis is maintained for these statistics and where apparent disparities arise, follow-ups are undertaken and verifications obtained from the reporting agencies. This relationship has worked well and presents no particular problems.

Coverage as Provided by the Independent Plans

Data on the number of people with voluntary health insurance protection through independent plans are obtained by the council from the Division of Program Research of the Social Security Administration. This governmental agency conducts an annual survey of

such plans and again, through a cooperative arrangement with the council, furnishes totals for each plan. An excellent description of the specifics of this annual study appears in a recent issue of the Social Security Bulletin.[10]

Duplication of Coverage

As has been indicated, duplication of coverage is an important point of concern in data of this type. In order to eliminate the possibility of counting the same person twice, the council staff conducts periodic investigations to measure the extent of the ownership of two or more health insurance contracts. Several examples of such studies may be of interest.

In 1956, analyses were made of 1,000 consecutive applications for insurance and 1,000 consecutive claim applications upon the part of 45 of the leading writers of individual accident and health insurance. Most of these companies require information on the extent to which an insured has additional coverage on both their applications for insurance as well as on their claim forms. The 1956 study indicated duplication of hospital-surgical-medical insurance in the order of 22 per cent among persons with individually purchased contracts.

A second study was undertaken, in 1956, among the representatives who install and service group contracts by six leading companies whose business represents more than two thirds of the total group insurance in force. These representatives were asked to furnish information on the extent and kinds of duplication which existed among the groups which they serviced. This study showed duplication of coverage at a level of 19 per cent among persons covered by group insurance programs.

A third study undertaken recently consisted of an analysis of several thousand hospital admissions in selected areas of the United States. Through the cooperation of a number of voluntary general hospitals, patients were interviewed either at time of admission or during the course of their hospital stay, and information was obtained on the extent of multiple health insurance ownership. Results of this study confirmed the reasonableness of the estimates developed by the methods previously mentioned.

In order to determine the net coverage under group and individual insurance, the duplication factors are split on a judgment basis into duplication within the insurance business and duplication between insurance and other coverages. For example, net totals for hospital expense protection for 1957 were developed in the following manner: 6 per cent was deducted from the insurance company gross group total of 48,439,000 and 14 per cent was eliminated from the insurance company gross individual total of 28,673,000. These steps, which eliminate duplication within the insurance business, in an amount of 6,920,000 produced the net total of coverage through insurance companies for 1957 of 70,192,000. To eliminate duplication between insurance and other coverages, an additional 1.3 per cent was deducted from the gross group insurance total and 8 per cent from the gross individual insurance total (8,630,000 policies in all), yielding the net total of persons with hospital expense protection at the end of 1957 of 121,432,000.

In deriving the net total of persons protected in each state, over-all duplication was allocated to each state by a method which assumed that duplication was higher in states having a higher proportion of the population covered by the particular type of protection than in states with a lower proportion.

Conclusion

The health of the population in the United States today is enhanced by its

access to the best in medical care. By its complex nature, however, such medical care is expensive and, as it evolves, these costs will undoubtedly continue to rise. It is felt that the continued growth of voluntary health insurance has played a significant role in the betterment of the health of the nation by assisting in the financing of these medical costs.

The measurement of the extent of voluntary health insurance here described is under constant review. Although effort is continually expended to improve the technics employed, it is felt that, from an over-all standpoint, the scientific basis of the survey justifies its prominence and provides a contribution toward medical care and how it is financed.

REFERENCES

1. American Economic Security, 1949-1951. Washington, D. C.: United States Chamber of Commerce.
2. Equitable Life Assurance Society, 393 Seventh Avenue, New York 1, N. Y.
3. Group Insurance and Group Annuity Coverage, U. S. Business. Life Insurance Association of America, 488 Madison Avenue, New York 22, N. Y.
4. Reed, Louis S. Blue Cross and Medical Service Plans. Washington, D. C.: Public Health Service, Federal Security Agency (Oct.), 1947.
5. Orsini, Louis A. Health Insurance Council. Accident and Health Underwriter (May), 1957.
6. "Argus Chart," 1958. Published by the National Underwriter Company, 420 East Fourth Street, Cincinnati 2, Ohio.
7. "Who Writes What," 1958. National Underwriter Company.
8. "Time Saver," 1958. National Underwriter Company.
9. Miller, Morton D. "1957 Study of Group Surgical Expense Insurance Claims." Presented at the Annual Meeting of the Society of Actuaries, October, 1958.
10. Perrott, Agnes W. Independent Plans Providing Medical Care and Hospital Insurance: 1957 Survey. Social Security Bull. (Apr.), 1958.
11. The Extent of Voluntary Health Insurance Coverage in the United States (12th ed.), 1958. Health Insurance Council.

Mr. Robbins is assistant director of statistical research, Health Insurance Association of America, New York, N. Y.

This paper was presented before the Statistics Section of the American Public Health Association at the Eighty-Sixth Annual Meeting in St. Louis, Mo., October 29, 1958.

Psychic Income

Pay, although of great importance, is only one among many factors to be considered in employee relations. Some of the other factors important in both job satisfaction and productivity are, according to a committee of the United Nations, "the need to give the staff a sense of belonging to their organization; the opportunity to do constructive work on important problems; adequate recognition of work well done; a reasonable sense of security." These nonfinancial factors constitute "psychic income and are in many cases far more important to the recruitment and retention of superior staff members than pay and fringe benefits."

(James M. Mitchell, Public Personnel Rev. 17, 268 (Oct., 1956))—Editorial, *Science*, Sept. 26, 1958.

What is a suicide? How many are there in a given community? These and other questions about suicide need critical review. This is the theme of the following report. Only on this basis can a sound public health approach be developed.

SUICIDE AND PUBLIC HEALTH—AN ATTEMPT AT RECONCEPTUALIZATION

Guido M. Crocetti, Ph.D.

THIS REPORT grew out of an unsuccessful attempt to organize a program for the prevention of suicides and attempted suicides in New York City. In attempting to organize such a program there were many conferences and discussions with psychiatrists, psychiatric social workers, hospital personnel, public health physicians, public health nurses, general practitioners, and administrators and budgetary officials. These discussions raised fundamental questions about the nature of suicide and attempted suicide as well as the propriety of public health effort in this area. Furthermore, the problem of what priority should be assigned to preventive programs of this sort was an ever-recurring one.

The context in which the questions were raised was a "practical" one. They were generally concerned with the sort of information it would be necessary to have to formulate a rational program, to justify the expenditure of tax dollars, and to obtain measurable and specific results. A fairly careful search of the literature failed to provide any clear noncontroversial answers to these questions.

In a further attempt to find answers to some of these questions, the health officers of 20 urban communities, with populations of over 100,000, were questioned about the availability of any program for the handling of attempted suicides.* The 14 responses indicated a considerable concern and awareness of suicide and attempted suicide as a public health problem. However, not a single response indicated the existence of a large-scale program for the prevention of suicides or attempted suicides based in a health department.

In the reporting communities suicide attempts were generally handled in the ways usually characteristic of psychiatric emergencies. Unfortunately, these ways are most often dictated by expediency and the availability of immediate resources rather than by a rationale dictated by well thought out principles. Most frequently there is a reliance on the police, the jail, and the county or municipal hospital. Follow-up is rare. A few communities are fortunate enough to have emergency psychiatric service on a 24-hour basis and thus possess some means for providing immediate psychiatric contact.

Accordingly, I was reluctantly forced to conclude that there does not seem to exist as yet a clearly demonstrable basis

* This project was carried out by Dr. Ida Gelber, at the time a member of the Research Division of the New York City Community Mental Health Board.

for the formulation of a program based in a health department for the prevention of suicide or the reduction of its occurrence in the community. This in turn led to a reconsideration of the questions that had been raised in the course of an attempt to formulate a program and to what might be done in the way of research and conceptualization to provide some interim answers which would permit an approach to a public health program in this area.

The questions raised could be subsumed roughly into three categories, philosophical, magnitude and definition, and relation of suicide to other conditions.

Philosophical Questions

One of the first resistances one encounters in attempting to obtain support for a program for the reduction of suicide is a widespread pervasive attitude succinctly summarized by Bennett in the following terms: "There is a tendency to feel that suicide is the individual's own business and that he should be allowed to die if he wishes."[1] It is not wise to discount this attitude based as it is on philosophic concepts deeply imbedded in our culture. To do so is to raise the implication that the public health person is a meddlesome "do-gooder" in an instance where the beneficiary does not wish to have "good done" for him.

This attitude is often based on the image of a particular kind of suicide. In this image a rational, mature individual, after due deliberation, decides to commit suicide rather than to prolong some intolerable stress on himself or others. The image that comes to mind is that of Socrates refusing escape and accepting the hemlock rather than to negate his teachings. Our contemporary society, unfortunately, provides too many examples of such situations. Obviously, spending public moneys on the prevention of this type of suicide is not easily justifiable under the heading of public health measures. On the other hand, many psychiatrists and other mental hygiene workers are accustomed to speaking and writing as though suicide were prima facie evidence of pathology. They, of course, may be correct but there has been to date no carefully controlled research to document this position. Similarly, almost all statistical studies neglect any distinction between what may be called "reality" suicides and "pathological" suicides.

The result of a meeting of these two different attitudes in committee or conference is usually an impasse frequently buttressed with dogmatic statements and anecdotal evidence. It is not a sufficient answer to the question to document that some suicides are the desperate, tortured acts of the mentally ill. What the "hard-boiled" administrator wants to know is, "How many?"

This is a question amenable to investigation, often no more than a simple statistical problem where sufficient data are available, and at worst, a securing of detailed information on a properly selected sample of suicides. The health officer contemplating preventive work in the area of suicide would be well advised to have this statistic available if he wishes to win widespread support for his program.

It should be emphasized that it is not the intention of the author to argue whether or not there exist justifiable or rational suicides, but rather that in view of the popularity of and tenacity of the belief that such suicides do exist, sound social psychological practice requires that adequate cognizance be taken of the problem in terms of research.

Questions of Magnitude and Definition

Another basic question very frequently raised, when plans for programs in the area of suicide and attempted suicide are being discussed, is the ques-

tion of magnitude. "How many suicides are there really?" This is a basic question because magnitude, either explicitly or implicitly, as well as inherent severity is often used as a means of establishing the priority for a given program or problem. Defining or establishing magnitude is, after all, a common-sense way of getting at the question: "How important is this problem in comparison to other problems?"

In the United States we have an overall figure of about 16,000 reported suicides per annum, and this is not a very impressive figure when compared to mortality from other causes. In many of the smaller communities suicide must be a very rare occurrence. Even in our larger communities where suicide is a significant cause of death, its frequency is relatively small when compared to analogous causes of death. For example, in New York City in 1955 there were 769 reported suicides but for the same period there were 3,032 deaths due to accidents.

There exist in the literature indications of various attempts to give to suicide an importance, and therefore a priority, not in keeping with the actual mortality statistics of death by suicide. The most usual of these attempts is to emphasize that suicides are underreported. In other words, a great many deaths that are in fact suicides are actually not reported under that rubric. This is undoubtedly true. But the administrator must ask: "How many?" and on this issue there is very little concrete evidence. In an unpublished paper by Wiener, et al.,[2] there is reported an interesting study touching on this question. For New York City records were kept in a separate reporting category for "deaths due to injuries in undetermined circumstances." After collecting data for one year, the material was analyzed in terms of characteristics of the victims of these deaths and the findings compared to the characteristics of known suicides. On the basis of analysis, Wiener, et al., conclude that "the suicide figure in New York City may be understated by 23 to 33 per cent and on the other hand, the nonmotor vehicle accidents may be overstated by 7 to 10 per cent and the home accident figure by 11 to 15 per cent."[2]

More studies of this type are urgently needed to help define the true rate of suicide and to estimate the extent and nature of under-reporting and to determine the various circumstances under which it tends to occur. This again is a problem to be investigated and appropriate technics are readily available.

A second recourse for claiming importance for suicide beyond its reported mortality is to group suicides and attempted but unsuccessful suicides together. In this approach both the unsuccessful attempted suicide and the successful fatal suicide are considered as constituting the same population or kinds of persons. Since attempted suicides outnumber reported successful suicides, this permits the investigator to multiply the known successful suicides by the ratio of unsuccessful suicides and claim the result of this multiplication as the total problem population. For example, if there are five suicide attempts to every one of the reported successful 16,000 suicides, then, instead of dealing with a population of 16,000 the investigator can now speak of a population of 80,000.

One of the problems here is to establish just how many suicide attempts actually are made. The figure that there are five attempts to every successful suicide is frequently used, but it is not really based on concrete, definitive evidence.

In New York City I tried to establish this ratio. Knowing the number of successful reported suicides for a given year I attempted to establish the number of known suicide attempts. I used information from hospital admissions, health department reports, and police

records. After much painful work I was able to establish a ratio of unsuccessful to successful reported suicides of only two to one. Of course this does not mean that the ratio I found is the correct ratio, it simply means that with my limited resources this was the number of suicide attempts I was able to document. Obviously, not every suicide attempt is hospitalized or known to the health department or known to the police. There is some evidence that not even every suicide attempt is seen by a physician. Certainly, every suicide attempt seen by a physician is not necessarily recognized by him as such. Instead there seems to be good indication that even where the "suicide attempt" is seen by a physician and even where the physician has grave suspicions as to the cause of the injury or illness, he may not treat the case as an attempted suicide for various reasons connected with the particular situation.

More work is urgently needed in establishing the true rate of attempted suicides. This, again, is a question for research. Without the answer we do not truly know the magnitude of the problem nor its quantitative relationship to the problem of successful suicide.

There is another question involved in the amalgamating of successful and unsuccessful suicides: What is the true etiological relationship between suicide and attempted suicide?

There is evidence that if one takes the successful suicide as a starting point, then attempted suicide and suicidal threats are indeed of etiological significance. For example, it has been reported that three out of four suicides have previously attempted or threatened suicide.[4] However, if one views the same problem starting with attempted unsuccessful suicides, then quite a different picture emerges. From the literature it appears that most suicide attempts are not eventually followed by a successful suicide. Further, it would be impossible for the relative magnitudes of documented occurrence in different sex groups to hold if this were not true. In an effort to investigate this problem further, the known characteristics of the successful reported suicides with the known characteristics of those who had attempted suicide were compared in New York City.

Striking differences were found. Among known successful suicides, 68 per cent were male and 32 per cent female; among the known attempted suicides these proportions were exactly reversed. In other words, 68 per cent of those attempting suicide were female and 32 per cent were male. Again: the median age of those committing suicide successfully was 49.7 years. The median age of those attempting suicide was 31.7 years. Suicide was proportionally (on a rate basis) more frequent among the unmarried (single, widowed, and divorced) than among the married. Attempts at suicide, on the other hand, were relatively more frequent among the married.

All these differences were significant at the 0.01 level. Schmid and Van Arsdol's study,[5] along with many others, have reached conclusions very similar to this one.

In the light of the data two different alternatives would appear possible. First, that the attempted suicide is not an effective or logical predictor of the successful suicide. This conclusion would run counter to most of our practice in treating attempted suicide, a great many common-sense observations and some very important theoretical considerations.

The second and more attractive possibility is that attempted suicide and successful suicide are related, but not on a random basis. That is, some selective factor or factors are operating to define the true population of potential suicides among those who attempt or threaten suicide. The delineation of

such factors would define the population at which a program might be directed, and would also provide some reasonable grounds for evaluating program effectiveness. This in turn raises a further question: Just what do we mean by "attempted" suicide? What do we mean by "threatened" suicide, by the term "a suicidal gesture?"

In the New York City study I included in one and the same category the individual admitted with self-inflicted injuries in critical condition through the emergency room of a hospital and the individual who flamboyantly had swallowed a dozen aspirin tablets.

In my attempt to investigate this question I was informed by one psychiatrist that he would classify as a suicide attempt only those cases where the action produced an immediate and serious threat of death. Another psychiatrist informed me that he would classify as suicide attempts any consciously self-destructive activity as well as verbal threats of suicide.

The common-sense experience of many administrators and lay people contradicts such all inclusive rubrics. I myself witnessed the transfer, from a general hospital to a psychiatric hospital, of an elderly man in the terminal stages of disease and too weak to lift himself from his bed. This ward patient was transferred as suicidal (with two strapping policemen in attendance) on the basis of his verbal statement, "I wish I were dead." It was obvious that what was involved here was not the problem of managing a suicidal patient in a general hospital, but the disposition of a chronic case by a hospital organized to treat acute diseases. Yet on the basis of hospital statistics this would have been classified as a patient making a suicidal threat. Consequently, statistics on suicidal attempts, gestures, and threats are frequently greeted with a certain amount of skepticism when they neglect careful definitions of what is being counted.

It is difficult to distinguish in the literature just what is being classified as a suicidal attempt or threat by the particular studies, and comparisons of statistics reported are consequently difficult. I suggest that in the interest of research clarity and comparability, studies dealing with suicide attempts consider a classification system along some common continuum—perhaps the intensity of physiological damage. Further, it would be helpful if suicide attempts under study be classed in some order such as: "Serious suicidal attempt, suicidal attempt, suicidal gesture, and suicidal threat," and that this type of ordering be followed without regard to the explicit criteria used for the selection of cases to be studied. Such a convention would considerably facilitate communication between the public health programmer in this area and other members of the community.

Relationship of Suicide to Other Conditions

Few of the theories of suicide—and none of the classical theories—consider suicide as an entity in and of itself. Generally it is viewed as a possible outcome of a more widespread condition. Thus, in grossly oversimplified terms one might say that psychoanalytic theories of suicide tend to see the act as a possible outcome of depression.[6-10]

Durkheim[11] in his sociologic theory of suicide sees suicide as a possible outcome of *anomie*, or normlessness. In these terms differential suicide rates become indicators of different degrees of social disorganization. Duhl, in an unpublished paper, adapts Lindeman and Kaplan's work so as to make suicide one of many possible reactions to loss and crises. This theory relates alcoholism, drug addictions, "accidental" injuries, and many other self-destructive reactions to each other as products of a common underlying pattern.

This general conception that there is an association between suicide and other types of destructive and antisocial activity is consistent with sociological studies. These studies have almost always indicated a relationship between specific urban location and rates of suicide. The most recent of these is Sainsbury's study in London.[12] The general finding of all of these studies is that certain types of areas close to the center of the city will have high rates of suicide. By and large these tend to be the same areas that have high rates of crime, delinquency, perinatal mortality, mental hospital commitment and virtually every other indicator of social disorganization on which we have reliable statistics.

In considering this question of the relationship of suicide to other conditions, it is interesting to note one of the ways in which suicide came to be of serious concern to the health department in New York City. The department expressed itself as follows: ". . . of the first 1,000 cases brought to the attention of the poison control board, 350 to 450 were possible suicide attempts." In spite of the fact that both theory and experience seem to confirm the concept that suicide, attempted suicide, and many other self-destructive patterns are related, few proposed programs for reducing the incidence of suicide have been based on this idea. Possibly this is because the assumed magnitude of the problem seems so staggering. However, in actual fact, we do not know the magnitude of the problem. We do not know the prevalence in any defined population of any of the conditions which various theories have postulated as "pre-suicidal." Such information would be an effective first step in considering the public health responsibility in this area.

There is a further implication that theory carries for public health practice in this area. That is the implication that attempting to control accidental death and injury—the leading cause of death in younger age groups—we may be dealing, at least partially, with the same basic population from which the suicides, attempted suicides, and partial suicides are drawn. In this simple administrative statistic there is an indication of a possible relationship between suicide and another public health problem, namely accidental poisoning.*

The problem of specifying the relationship between suicide, suicide attempts, and other conditions does not seem to be one which has received very rigorous study. Most clues which are available have come from studying suicides and suicidal patients, and attempting to find in their pre-suicidal history some common factors. Admittedly, these studies have been valuable. However, in and of themselves they are not sufficient. For if as theory, administrative experience and sociological studies all indicate suicide and attempted suicide as merely one aspect of a broad spectrum of behavioral disorder then such studies are likely to either overstate or understate the true dimensions of the problem. To count suicides alone means to understate the prevalence of the disorder in the population. On the other hand, to test whether or not suicide is significantly associated with any given pattern of behavior disorders in the population, one must know the prevalence of the disorder in the nonsuicidal population.

Without the knowledge that comes of careful study and measurement the effectiveness of such programs may be sharply reduced. It is theoretically possible—if the basic concept is sound—that educational programs in this area may even stimulate among this population the very results the education is designed to prevent.

---

* There is a further implication in the rather grim statistic quoted above, and that is in order to control accidental death and injury—currently a major public health problem—we may be forced to deal with the problem of suicide and attempted suicide because of our theoretical interest in the question.

It is not the argument of this paper that such a notion is actually true. It is the argument of this paper that such a notion needs to be rigorously tested. Moreover, we need much more careful documentation and some re-thinking of our concepts before we can reasonably expect the community to support public health programs dealing with the problem of suicide.

REFERENCES

1. Bennett, A. E. "Suggestions for Suicide Prevention," in Shneidman and Farberow's Clues to Suicide. New York, N. Y.: McGraw Hill, 1957, pp. 187-193.
2. Wiener, L., et al. Accident or Suicide. Unpublished paper presented to New York City Chapter of the American Statistical Association, 1953.
3. Ibid.
4. Bennett, op. cit., p. 187.
5. Schmid, C. F., and Van Arsdol, M. D., Jr. Completed and Attempted Suicides. Am. Sociol. Rev. 20: 273-283, 1955.
6. Zilboorg, G. Differential Diagnostic Types of Suicide. Arch. Neurol. & Psychiat. 35: 270-291, 1936.
7. ————————. Suicide Among Civilized and Primitive Races. Am. J. Psychiat. 92: 1347-1369, 1936.
8. ————————. Considerations in Suicide with Particular Reference to That of the Young. Am. J. Orthopsychiat. 17: 15, 1937.
9. Freud, S. Mourning and Melancholia. (In Collected Papers, Vol. IV.) London, England, Hogarth Press, 1925. (Originally published in Ztschr. Psychoanalyse, Band IV, 1917.)
10. Fenichel, Otto. The Psychoanalytic Theory of Neurosis. New York, N. Y.: Norton, 1945.
11. Durkheim, E. Le Suicide (translated by Spalding). Glencoe, Ill.: Free Press, 1950.
12. Sainsbury, P. Suicide in London: An Ecological Study. London, England.: Chapman & Hall, 1955.

Dr. Crocetti is assistant professor of public health administration, Division of Mental Hygiene, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md.

This paper was presented before the Mental Health Section of the American Public Health Association at the Eighty-Sixth Annual Meeting in St. Louis, Mo., October 30, 1958.

Graduate Traineeships for Physical Therapists

By reason of a grant from the U. S. Office of Vocational Rehabilitation, the American Physical Therapy Association is enabled to administer 15 traineeships of $2,400 each to physical therapists for graduate study. The purpose is to increase the supply of physical therapists qualified for teaching, research, or other leadership positions. Among the eligibility requirements are United States citizenship, baccalaureate degree from an accredited college or university, membership in APTA, and a minimum of two years of physical therapy experience.

Awards will be made three times a year. For a study program in January-February, 1960, applications must be in no later than November 1, 1959; for June, 1960, study, no later than March 1, 1960. Further information and application blanks from Mrs. Helen K. Klein, Consultant, Department of Professional Education, American Physical Therapy Association, 1790 Broadway, New York 19, N. Y.

A study of suicides that succeeded shows that the majority were mentally ill. The individuals concerned suffered from chronic alcoholism or were in the depressive phase of manic-depressive disease. This study indicates that a practical program of prevention involves diagnosis and hospitalization of such cases.

SOME CLINICAL CONSIDERATIONS IN THE PREVENTION OF SUICIDE BASED ON A STUDY OF 134 SUCCESSFUL SUICIDES

Eli Robins, M.D.; George E. Murphy, M.D.; Robert H. Wilkinson, Jr., M.D.; Seymour Gassner, M.D.; and Jack Kayes, M.D.

SUGGESTIONS concerning the prevention of suicide have arisen chiefly from statistical studies of coroners' records,[1] from studies of patients who have been hospitalized and who commit suicide in the hospital or shortly after discharge,[2-4] from the reports of psychiatrists based on their experiences with their own patients,[5-7] and from studies of attempted suicide.[8-10] These suggestions have, in general, been of value in helping to define more clearly the problem of preventing suicide. In none of these studies, however, have all of the suicides committed within a given geographical area in a specified time period been studied carefully with regard to both the clinical and ecological aspects of suicide. As a result, there are no reported data which can answer the following questions about an unselected (consecutive) group of suicides: (a) What proportion of persons who commit suicide are clinically ill prior to death? (b) What is the nature and frequency of the illnesses from which these persons suffer? (c) Are there other illnesses that, although common, are rarely or never associated with successful suicide? (d) What are some of the factors other than diagnosis that may be helpful in assessing the probability of suicide? (e) In urban United States to what degree is suicide currently a clinical problem, as measured by the proportion of suicides who had been seen by a physician or psychiatrist during their last episode of illness?

Since answers to these questions should be useful in helping to prevent at least some suicides, the present investigation was designed to attempt to gain such information. All suicides occurring in metropolitan St. Louis in a one-year period were studied by means of interviews with relatives, friends, job associates, physicians, and others shortly after each successful suicide.

Method

In the one-year period between May 15, 1956, and May 15, 1957, the coroners of the City of St. Louis and of St. Louis County[1] returned a verdict of suicide in the deaths of 134 persons.

Of these 134 persons, 119 have been studied by means of a primary interview with close friends or relatives within a few weeks to a few months after the suicide. Of the remaining 15 cases, the relatives refused an interview in 13, and two suicides were transients with no relatives or friends in St. Louis. In addition to the primary interview, interviews were obtained with other relatives, friends, job associates, clergymen, landladies, bartenders, nurses, attorneys, policemen, and physicians. A total of 305 interviews were obtained, including ancillary interviews on the 15 persons for whom no primary interview was obtained. In addition to these interviews, general hospital records, Social Service Exchange records, police records, and mental hospital records were examined.

The primary interview was a systematic one in which over 95 per cent of the responses were scored as yes or no or with a number. Any positive response was pursued with further questions so that there was a minimum of undescribed positive answers. The interview required an average of over two hours to complete. It covered past and present medical and psychiatric history, personal and social history, family history, and details of the successful suicide and the events which lead up to it. The interview will be described in greater detail in other publications.

As will be described later, the great majority of the suicides fell into one or other of two diagnostic groups, manic-depressive depression and chronic alcoholism. For purposes of the present report it is pertinent to describe the way we arrived at these two diagnoses. The diagnosis of manic-depressive depression was based on responses to questions concerning: (a) a previous history of a manic or a depressive episode with complete remission (12 items in the primary interview); (b) discreteness of the present episode (four items); (c) "medical" symptoms, such as insomnia, anorexia, weight loss, and fatigue (37 items); (d) psychological symptoms, such as feeling blue, loss of interest, psychomotor retardation, diminished sexual drive, low expectancy of recovery, and somatic and nihilistic delusions and delusions of poverty and guilt (84 items); and (e) disturbances in social behavior, such as diminished recreational activity and decreased social contacts (20 items). In addition to these items, age of onset and family history of manic-depressive disease were also considered in arriving at the diagnosis. These criteria are based on our clinical experience and on well documented clinical studies.[11,12] The diagnosis of manic-depressive disease as used in this study includes the diagnoses of involutional melancholia and psychotic depressive reaction. This use of the term to include these entities has been justified by both clinical[11,13] and genetic[14] studies. It is our clinical impression that so-called neurotic depressive reaction is in many instances indistinguishable from manic-depressive depression without delusions or grossly apparent retardation, with regard both to symptomatology and clinical course.[15] When the neurotic depression is clinically different from a manic-depressive depression the neurotic depression turns out to be merely an episode in a preexisting neurosis, for example, a conversion reaction. The latter diagnosis would then be the primary one. Such secondary neurotic depressions did not occur in any of the 134 cases.

Chronic alcoholism was diagnosed in accordance with the definition of Keller,[16] "Alcoholism is a chronic behavioral disorder manifested by repeated drinking of alcoholic beverages in excess of the dietary and social uses of the community and to an extent that interferes with the drinker's health or his social or economic functioning."

Table 1—Numbers of Persons in Each Diagnostic Group

Diagnostic Group	Men	Women	Total Group
Manic-depressive depression	42	18	60
Chronic alcoholism	27	4	31
Miscellaneous diagnoses	14	4	18
Chronic brain syndrome	4	1	5
Terminal medical illness	3	2	5
Schizophrenia	3	0	3
Apparently clinically well	3	0	3
Drug addiction	1	1*	2
Undiagnosed but psychiatrically ill†	20	5	25
Total	103	31	134

* Associated with hysteria (conversion reaction).
† Including five patients about whom there was insufficient information.

This definition is in essential agreement with that of the World Health Organization.[17] There were 12 items in the interview that were useful in eliciting a history of family, job, social, and medical difficulties related to alcoholism. In addition to these items, age of onset, defined as the age at which the person first got into difficulty because of drinking, and a family history of alcoholism were also considered in making a diagnosis. It is not germane to this report to discuss whether alcoholism is a symptom of different diseases or is a disease entity.

The diagnoses were made by two psychiatrists who reviewed the records independently. If there was an unresolved disagreement with regard to diagnosis or if neither psychiatrist could make a definite diagnosis the person was placed in the undiagnosed group. For a person to be diagnosed as suffering from manic-depressive disease he had to have positive responses in at least three of the five categories (a through e) previously listed, in addition to having the clinical picture of the illness.[11,12] To be diagnosed as a chronic alcoholic he had to have at least three positive findings among those listed in Table 4.

Results

Clinical Diagnoses—In this group of 134 suicides, there were 101 persons who were suffering from one of five specific psychiatric illnesses, five who were suffering from a terminal medical illness in whom there was no definite evidence of psychiatric disease, three who were apparently clinically well, and 25 who were probably psychiatrically ill but in whom a specific diagnosis could not be made (Table 1).

In this report only those aspects of clinical diagnosis directly relevant to the possibility of preventing suicide will be discussed. The three most striking findings concerning diagnosis follow. First, 98 per cent of the total group of persons were clinically ill, 94 per cent of them being psychiatrically ill, and 4 per cent only medically ill. Suicide, at least in this urban area, occurs, therefore, almost exclusively in persons who are psychiatrically ill. Second, and more important in so far as prevention is concerned, 68 per cent of all the

suicides were found to be suffering from one of two diseases—manic-depressive disease or chronic alcoholism. Excluding the 25 undiagnosed cases, 83 per cent of the remaining 109 cases belonged to one or the other of these two categories (Table 2). Those with manic-depressive disease were solely in the depressed phase at the time of their deaths. No person committed suicide while in the manic phase. Third, there was no person in the series who had only an uncomplicated "neurosis" (anxiety reaction, conversion reaction (hysteria), or obsessive-compulsive reaction).[2] This finding is in agreement with that of Jameison who studied hospitalized patients.[3] The only person who was given a primary diagnosis of "neurosis" suffered from drug addiction as well as from conversion reaction.

Since the bulk of the suicide problem resides in manic-depressive disease and chronic alcoholism, the first consideration in attempting to prevent suicide is the clinical recognition of these illnesses. Some salient clinical findings among the 60 persons diagnosed as having manic-depressive disease are shown in Table 3. The recognition of manic-depressive disease depends not only upon the elicitation of its symptoms (Table 3, parts d, e, and f and the dagger footnote) but also on the natural history of the disease. Factors in the natural history which are important in making a proper diagnosis include a history of being psychiatrically well, exclusive of attacks of manic-depressive disease[3]; a history of a previous episode of manic-depressive disease[4]; a discrete episode of relatively recent onset (Table 3, part c), characterized by the symptoms listed in Table 3 (parts d, e, and f); a family history of manic-depressive disease[4]; and, in half the cases, an onset after the age of 40.[11,13,14]5. The importance of this last point is that the other so-called functional psychiatric disorders, anxiety reaction, conversion reaction, obsessive-compulsive reaction, and schizophrenia infrequently or rarely begin after 40.[11,20-22]

The diagnosis of chronic alcoholism may be made when information is obtained that alcohol is used by the patient in such amounts as to interfere with his personal or social relationships, economic welfare, or his health. In attempting to establish this diagnosis it is often important to obtain a history from the family as well as from the patient. In the present series each of these indexes of alcoholism occurred with a high frequency (Table 4).

Factors Other than Clinical Diagnosis —One of the most striking findings of

Table 2—Proportion of Persons in Each Diagnostic Group

Diagnostic Group	Per cent of Total Group			Per cent of Diagnosed Group		
	Men	Women	Total	Men	Women	Total
Manic-depressive depression	41	58	45	51	70	55
Chronic alcoholism	26	13	23	32	15	28
Miscellaneous diagnoses	14	13	13	17	15	17
Undiagnosed	19	16	19	—	—	—
Manic-depressive depression +chronic alcoholism	67	71	68	83	85	83

Table 3—Prevalence of Selected Symptoms and Other Historical Data in Persons Diagnosed Manic-Depressive Disease

Item	Per cent
(a) Clinically well, exclusive of attacks of manic-depressive disease	69
(b) Previous episode of manic-depressive disease	46
(c) Discreteness of present attack	
Duration of present attack six months or less	57
12 months or less*	87
(d) "Medical" symptoms†	
Insomina	88
Anorexia	82
Weight loss	80
Low energy, weakness	74
Fatigue	71
Constipation	28
(e) Psychological symptoms	
Blue, depressed, sad	97
Diminished motor activity	77
Loss of interest	72
Diminished sexual interest and activity	61
Undertalkative	59
Low expectancy of recovery; "black" future	53
Feeling of being a burden	44
Indecisiveness	44
Feeling of worthlessness or marked guilt	40
Agitation	38
Personal untidiness	32
Difficulty in thinking and concentration	31
Delusions	27
(f) Disturbances in social behavior	
Decreased social and recreational activity	77
(g) Miscellaneous items	
Age of onset 40 and over‡	75
Family history of manic-depressive disease	26

* Only 13 per cent of the cases had a duration of the present attack greater than one year. The maximum duration (one case) was four years.

† Other "medical" symptoms, such as headache, palpitation, dyspnea, dizzy spells, abdominal pain, and vomiting, which occur with a high frequency in manic-depressive disease,[11,12] are not listed here because they are less specific in helping to differentiate this illness from other psychiatric diseases. They are, however, important in the recognition of and in the total clinical picture of manic-depressive depression.

‡ Age of onset is the age at the time of the first reported attack of manic-depressive disease.

this study was the high frequency with which these persons communicated their suicidal ideas, by specific statements of intent to commit suicide, by statements concerning their preoccupation with death and desire to die, and by making unsuccessful suicide attempts. These statements were made to family, friends, job associates, and many others. Among the manic-depressives, 68 per cent communicated suicidal ideas, 38 per cent specifically stating they intended to kill themselves; the corresponding figures for the alcoholics were 77 per cent and 61 per cent. In the majority of instances, the suicidal communications were of recent onset (months), repeatedly verbalized, and expressed to a number of persons. These communications of suicidal intent have been described in detail elsewhere.[23]

The age of the manic-depressives appears to be an important factor in evaluating the probability of suicide. Only five out of 60 cases (8 per cent) were under 40.[6] This finding appears even more striking when it is remem-

Table 4—Prevalence of Selected Drinking Behaviors and Complications in Persons Diagnosed Chronic Alcoholism

Item	Per cent
Informant thought person drank too much	94
Daily drinking	94
Benders	78
Family objected to person's drinking	78
Arrests related to drinking	66
Medical and psychiatric complications of alcoholism	65
Suicidal person thought he drank too much	62
Job difficulties related to drinking	56
Automobile accidents related to drinking	35

bered that half of unselected (selected without regard to suicide) manic-depressive patients become ill for the first time before 40,[11] yet only 8 per cent of the suicides in the present series were under this age. The latter finding, coupled with the fact that half the cases of manic-depressive disease begin before 40 indicates that younger manic-depressives have less tendency to kill themselves than do older ones. The finding that only 13 per cent (two out of 15) of the manic-depressives with an age of onset under 40 killed themselves in their first episode of the disease compared with 68 per cent (30 out of 44) of those over 40 suggests that it is not the number of the attack, but age itself, or its concomitants which somehow increases the tendency toward suicide over the age of 40.

In the manic-depressive group there were 42 men and 18 women, a ratio of 2.3:1. Since manic-depressive disease is said to occur more frequently in women than in men—at least in those hospitalized for the illness,[24,25] it appears that there is a special disposition for male manic-depressives to kill themselves.[7] However, the magnitude of the differential rate for suicide between the sexes does not provide additional confidence in predicting the risk of suicide in an individual man or woman.

The duration of the illness in the chronic alcoholics varied from seven to 46 years in the 21 cases where it could be determined with reasonable accuracy, with a mean and median duration of 20 years. The importance of this finding is that suicide infrequently occurs in the early stages of chronic alcoholism. The danger of suicide in alcoholism is, therefore, largely confined to the later periods of the disease. This should not be taken to signify that all these cases were far advanced, in the sense of having serious medical and psychiatric complications or of being completely "down and out." In the 17 cases in whom reasonably definite information was available, 35 per cent did not have any clear evidence of serious complications (Table 4).

Medical and Psychiatric Care—Persons with manic-depressive disease and chronic alcoholism received a substantial amount of medical and psychiatric care in the year preceding their suicides. Almost three-quarters (73 per cent) of the manic-depressives had received care for their manic-depressive disease within one year preceding their suicides and one-half (53 per cent) had received such care within one month of their suicides (Table 5). In contrast, although the chronic alcoholics received substantial care, they received much less than the manic-depressives: 40 per cent had care for their alcoholism within one year and 22 per cent within one month (Table 5). That the care for both groups was not entirely in the hands of physicians without special training in psychiatry is shown by the findings that 29 per cent of the manic-depressives and 11 per cent of the alcoholics had been examined by a psychiatrist. Additional evidence of the quantity and intensity of care is offered by the findings that 15 per cent of the manic-depressives and 10 per cent of the chronic alcoholics had been in a psychiatric hospital within one year of their deaths, and an additional 11 per cent of the manic-depressives and 6 per cent of the alcoholics had been in general hospitals for symptoms of their psychiatric disease (Table 6).

The difficulties in the psychiatric care of these patients are shown by data concerning the number of persons referred to a psychiatric hospital who did not go, and by the number who killed themselves while still in the hospital or shortly after their discharge. There were 12 manic-depressives (20 per cent of the group) who refused to enter a

Table 5—Kind of Illness for Which Medical and Psychiatric Care Was Given in the Year Preceding the Suicide

Diagnostic Group and Kind of Illness	Prevalence of Care, Per cent			
	Time Prior to Suicide (Months)			
	<1	1-3	3-12	Total Within 1 Year
Manic-depressive disease				
Psychiatric illness only*	44	8	5	57
Psychiatric and medical illness	9	7	0	16
Total care for psychiatric illness†	53	15	5	73
Medical illness only‡	5	2	5	12
Total care for all illness	58	17	10	85
Chronic alcoholism				
Psychiatric illness only*	11	7	7	25
Psychiatric and medical illness	11	4	0	15
Total care for psychiatric illness†	22	11	7	40
Medical illness only‡	11	0	4	15
Total care for all illness	33	11	11	55

* The psychiatric illness referred to throughout the table is manic-depressive disease or chronic alcoholism in each of the diagnostic groups, respectively. The medical illness ranges from care for chronic cardiovascular disease to the treatment for the effects of a suicide attempt.

† The following proportions of each diagnostic group were seen by a psychiatrist within the year: manic-depressive disease, 29 per cent; chronic alcoholism, 11 per cent. The remaining 44 per cent of manic-depressives and 29 per cent of alcoholics who had care for their psychiatric illness within the year were seen by the physicians who did not have special training in psychiatry.

‡ It is not definite whether care for the psychiatric illness was to some extent involved here. In every case of chronic alcoholism, the person was suffering from his psychiatric disease as well as from a medical illness.

Table 6—Hospitalizations in the Year Preceding Suicide

Hospitalizations for Psychiatric Disease*	Manic-Depressives		Alcoholics	
	No.	Per cent	No.	Per cent
Psychiatric hospital, prior to suicide	7	12	3	10
Suicide while in a psychiatric hospital	2	3.4	0	0
General hospital for psychiatric disease, prior to suicide	5	8	1	3
Suicide while in a general hospital	2	3.4	1	3
Total hospitalizations for psychiatric disease	16	27	5	16
Referred to psychiatric hospital but did not go	12	20	1	3
Total possible hospitalizations for psychiatric disease	28	47	6	19

* Hospitalizations for primarily medical or surgical reasons are not included in these figures.

psychiatric hospital or whose families refused to permit them to enter, shortly before their suicides (Table 6). In contrast, only one chronic alcoholic (3 per cent of the group) was referred to a psychiatric hospital and did not go (Table 6). The last figure is low because only three other alcoholics were referred to a psychiatric hospital, and each of them entered the hospital. It is striking that within the year prior to death 47 per cent of the manic-depressives and 19 per cent of the alcoholics had either been hospitalized for their psychiatric disease or had been referred to a psychiatric hospital (Table 6).

There were 10 persons in the two diagnostic groups under discussion who killed themselves within eight months after discharge from a psychiatric hospital. Seven of these persons were manic-depressives, and three were alcoholics. The dangers of premature discharge from the hospital are emphasized by these findings, since each of these patients was in the same episode of illness for which he had been hospitalized. It should be noted that vigilance in the hospital is also necessary since four additional manic-depressives and one additional alcoholic killed themselves while in the hospital (Table 6). Of these five patients, two were in a psychiatric hospital and three in a general hospital.

Discussion

It is our impression that the only generally effective means of reducing the suicide rate is to hospitalize in a closed ward the potentially suicidal person.[8] The problem is one of deciding who is the potentially suicidal person. From the data of the present study, two large subgroups of potentially suicidal persons who are recognizable are those suffering from a manic-depressive depression who communicate their suicidal ideas and those with chronic alcoholism who communicate suicidal ideas. These two subgroups constitute 49 per cent of the total group of 134 suicides. If suicides in these two subgroups (manic-depressives and alcoholics who communicate their suicidal intentions) alone could be prevented, the annual number of lives saved in the United States would be 8,212 (49 per cent of 16,760, the number of persons who committed suicide in the United States in the last reported year.)[27]

These findings suggest that, when a person in either of the above two subgroups[9] comes to the attention of a physician, the physician should recommend immediate hospitalization in a closed psychiatric ward. Before physicians should accept this suggestion as a practical recomendation, however, they would need to know the answer to one further question: How many persons with these two diseases communicate suicidal ideas and do not commit suicide, even though they are not hospitalized? That is, how many persons would physicians hospitalize who did not in fact require hospitalization in order to prevent their suicides? The answer to this question is not known and is an area requiring intensive investigation.

It should be pointed out that there appear to be reasons other than potential suicide for hospitalizing manic-depressive patients. These include marked agitation, malnutrition, weight loss, inability to be kept at home, and ill-advised decisions regarding their marital, job, and social lives.[32] A recent study suggests that one-quarter of manic-depressive patients makes such ill-advised decisions regarding their lives during their illness.[11] There are, therefore, fewer patients hospitalized without justification than would appear from assuming that the only reason for hospitalizing manic-depressive patients is the prevention of suicide.

The difficulties of recommending

Table 7—Death by Suicide in Manic-Depressive Disease: A Summary of Five Follow-Up Studies

Investigator	No. Cases	No. Dead	Per cent Dead	No. Dead by Suicide	Per cent Dead by Suicide	Per cent of Deaths Due to Suicide
Langelüddecke[29]*	341	268	78.8	41	12.0	15.3
Slater[30]	138	59	42.8	9	6.5	15.3
Lundquist[13]	319	119	37.4	17	5.3	14.3
Schulz[31]*	2004	492	24.5	66	3.3	13.4
Stenstedt[14]	216	42	19.4	6	2.8	14.3
Mean‡						14.5†

* Original article not consulted, reviewed in Stenstedt.[14]

† The figure of 14.5 per cent in the text is this mean. Since there is so little variation in the proportion of deaths by suicide despite the great variation in the proportion who died from any cause, it is assumed that had all patients been followed until their deaths the proportion dead by suicide would have remained near 14.5 per cent.

‡ Not weighted for the differing numbers of cases.

closed ward hospitalization for all manic-depressives who have communicated their suicidal intentions, without doing a control study of manic-depressives who have not committed suicide, have been discussed above. However, universal hospitalization might nevertheless be considered for the following reasons. First, our results suggest that the elderly male manic-depressive patient who has communicated his suicidal intentions is an especially serious suicide risk, and that perhaps at least all of these patients require hospitalization. Second, there are five studies which indicate that 14.5 per cent of manic-depressives will kill themselves in one or another episode of the disease (Table 7). If the assumption made in the dagger footnote to Table 7 is valid, then it suggests that the risk of suicide in a depressed episode is larger than is usually assumed. Since the mean number of episodes of manic-depressive disease in approximately a 20-year period is 1.8,[13] the chances of suicide are 8 per cent in any given episode. This latter figure may decrease to from 2 to 4 per cent in a given episode if a whole lifetime instead of 20 years is considered. But even the last figures are too high a death rate to be permitted to occur in manic-depressive disease, which otherwise has such a good prognosis.

There are indications that the possibility of preventing suicide in manic-depressive patients may be even better than in chronic alcoholics. In contrast to the chronic alcoholics, manic-depressives receive more medical and psychiatric care (Table 5); have a discrete episodic illness (Table 3) with a marked and relatively acute behavior change, having a high visibility for concerned relatives; have a short-lived (months) illness with the prospect of a spontaneous (or induced) remission in the vast majority of instances[3,28]; and, are generally much more amenable to the necessary closed ward hospitalization than are alcoholics.

Is education of the general public concerning the symptoms of manic-depressive disease a part of the answer to the prevention of suicide? In this urban area (St. Louis) 73 per cent of the manic-depressives went to a physi-

cian within one year of their suicides for the symptoms of manic-depressive disease. This is a high proportion of the cases and suggests that public education is less needed than are better criteria for hospitalization of such patients when they see a physician. However, the present data have shown that for 20 per cent of the manic-depressives hospitalization was recommended and not accepted by the relatives; therefore, public education along these lines must be considered, and perhaps tried on selected populations. Alcoholism presents a different problem. Although its symptoms are recognizable by the general public, only 40 per cent of these patients had medical or psychiatric care within one year preceding their suicides. This low proportion of the alcoholics seen by a physician is probably related to the chronicity of the disease and to the frequent isolation of advanced alcoholics from their families. If this is the case, public education may not be very helpful in preventing suicide in alcoholics. The high frequency of suicidal communications in the manic-depressives and alcoholics suggests that public education concerning the seriousness of this behavior, at least in the two illnesses under discussion, may be helpful in reducing the suicide rate.

Finally, if we had found that suicide was an impulsive, unpremeditated act without rather well defined clinical limits, then the problem of its prevention would present insurmountable difficulties using presently available clinical criteria. The high rate of communication of suicidal ideas indicates that in the majority of instances it is a premeditated act of which the person gives ample warning. Therefore, there is currently available to the physician information he needs to take an active role in preventing suicide. To take this role, he must be able to diagnose the two illnesses from which the majority of the suicides are suffering and must take a careful history from the family and from the patient as to whether or not the person has communicated suicidal ideas.

Summary and Conclusions

1. A study of 134 consecutive successful suicides has been made by means of systematic interviews with family, in-laws, friends, job associates, physicians, ministers, and others a short time after the suicide.

2. Some of the major findings which may be helpful in planning a program of suicide prevention included: (a) 98 per cent of the suicides were clinically ill, 94 per cent of them psychiatrically ill; (b) 68 per cent of the total group were suffering from one of two diseases — manic-depressive depression or chronic alcoholism; (c) there was no patient found with an uncomplicated "neurosis" (anxiety reaction, conversion reaction or obsessive-compulsive reaction); (d) 68 per cent of the manic-depressives and 77 per cent of the alcoholics communicated their suicidal intentions prior to their suicides; (e) 62 per cent of the manic-depressives and alcoholics had had medical and psychiatric care for the illness associated with their suicides within one year of their deaths. The manic-depressives had had even more care than did the alcoholics, 73 per cent versus 40 per cent, respectively.

3. Closed ward hospitalization is suggested as the only currently available effective means of preventing suicide.

4. The decision as to whom to hospitalize was discussed and it was pointed out that for the present it seemed most useful to concentrate on attempting to prevent suicide in two groups—the manic-depressives and alcoholics who communicate their suicidal intentions. Extension of the present work to include manic-depressives and

alcoholics who have not committed suicide is necessary in order to establish the over-all frequency of communication of suicidal intent in these diseases.

5. It was emphasized that all physicians should know the diagnostic features of manic-depressive disease and alcoholism, and should ask the patient's family as well as the patient concerning suicidal communications.

Footnotes

1. We wish to thank the coroners for the City of St. Louis (Patrick J. Taylor) and for St. Louis County (Arnold J. Willmann and Raymond I. Harris) and their staffs (Mary Alice Quinn, Mildred B. Saemann, and Rose Marie Algarda) without whose cooperation this study would not have been possible.

2. The 25 undiagnosed persons will be discussed in detail in another report. It is only necessary to state here that in no case was there a serious possibility that one of these three "neuroses" was the primary diagnosis.

3. To make the diagnosis of manic-depressive disease it is not essential that the patient be psychiatrically well prior to the onset of the illness or between attacks. This finding, however, greatly increases the likelihood of the diagnosis of manic-depressive disease being correct. In the present study 69 per cent of the persons had no history of other psychiatric illness, 23 per cent had previously used alcohol to excess, and 8 per cent were reported to have been "nervous" all of their lives. Since this last figure is consistent with the reported prevalence of "neurosis" in the general population,[18,19] it suggests that there is no special relationship to manic-depressive disease. It should be emphasized that the symptoms of lifelong nervousness were not like the symptoms found in the manic-depressive attacks in these "nervous" patients.

4. Although these findings may be expected in only half or less of the cases, their occurrence increases the likelihood of the present episode being manic-depressive disease.

5. In our series, 75 per cent of the cases began after 40. This may be due to some special characteristic of manic-depressives who commit suicide or to the fact that the data were collected in some cases from informants who had not known the suicidal person for his whole life.

6. This difference for the chronic alcoholics was much less striking and therefore of relatively little value in making predictions about individual patients. Nine of the 31 alcoholics (29 per cent) were under 40 at the time they committed suicide.

7. In the present study the ratio of male to female alcoholics is 6.8:1 but this finding is not helpful in deciding about potential suicides in alcoholics, since 6.8:1 ratio is not appreciably different than the estimated 5.5:1 ratio for men to women alcoholics in the United States.[26]

8. There are no critical data in the literature to support the ideas that drugs, electric shock therapy, or psychotherapy are effective in preventing suicide. Until such data are forthcoming hospitalization seems to be the soundest policy. It is not our purpose to discuss the treatment of the suicidal patient once he is hospitalized except to reemphasize the dangers in discharging such patients too soon.

From the data of this study the ideal way to prevent the majority of suicides appears to be the prevention of manic-depressive disease and alcoholism. Since there is no known way to prevent either of these diseases, this point will not be discussed further.

9. From the findings of this study it is highly suggestive that suicidal communications in the "neuroses" (anxiety, conversion and obsessive-compulsive reactions) do not herald a successful suicide, although they indicate a serious disturbance. As a result, once a proper clinical diagnosis is made, the suicidal communication can be evaluated with a great deal more confidence as to its seriousness or lack of it.

REFERENCES

1. Parnell, R. W., and Skottowe, I. Towards Preventing Suicide. Lancet 1:206–208, 1957.
2. Jameison, G. R., and Wall, J. H. Some Psychiatric Aspects of Suicide. Psychiatric Quart. 7:211–229, 1933.
3. Jameison, G. R. Suicide and Mental Disease: A Clinical Analysis of One Hundred Cases. Arch. Neurol. & Psychiat. 36:1–12, 1936.
4. Shneidman, E. S., and Farberow, N. L. Clues to Suicide. Pub. Health Rep. 41:109–114, 1956.
5. Oliven, J. F. The Suicidal Risk. Its Diagnosis and Evaluation. New England J. Med. 245:488–494, 1951.
6. Eidelman, J. R. Prevention of Suicide. J. Missouri M. A. 48:441–446, 1951.
7. Bennett, A. E. The Physician's Responsibility in the Prevention of Suicides. Dis. Nerv. System 15: 207–210, 1954.
8. Schmidt, E. H.; O'Neal, P.; and Robins, E. Evaluation of Suicide Attempts as Guide to Therapy. Clinical and Follow-up Study of One Hundred Nine Patients. J.A.M.A. 155:549–557, 1954.
9. Batchelor, I. R. C., and Napier, M. B. Attempted Suicide in Old Age. Brit. M. J. 2:1186–1190, 1953.
10. Stengel, E., and Cook, N. G. Attempted Suicide. Its Social Significance and Effects. Maudsley Monographs No. 4. London, England: Chapman and Hall Ltd., 1958.
11. Cassidy, W. L.; Flanagan, N. B.; Spellman, M.; and Cohen, M. E. Clinical Observations in Manic-Depressive Disease. A Quantitative Study of One

Hundred Manic-Depressive Patients and Fifty Medically Sick Controls. J.A.M.A. 164:1535–1546, 1957.
12. Campbell, J. D. Mild Manic-Depressive Psychosis, Depressive Type: Psychiatric and Clinical Significance. J. Nerv. & Ment. Dis. 112:206–236, 1950.
13. Lundquist, G. Prognosis and Course in Manic-Depressive Psychoses. A Follow-up Study of 319 First Admissions. Acta psychiat. et neurol. Suppl. 35:1–96, 1945.
14. Stenstedt, A. A Study in Manic-Depressive Psychosis. Clinical, Social, and Genetic Investigations. Ibid. 79:1–111, 1952.
15. Ascher, E. A Criticism of the Concept of Neurotic Depression. Am. J. Psychiat. 108:901–911, 1952.
16. Keller, M. Alcoholism: Nature and Extent of the Problem. Ann. Am. Acad. Polit. & Social Sc. 315: 1–11, 1958.
17. World Health Organization. Expert Committee on Mental Health, Alcoholism Subcommittee (Second Report). Tech. Rep. Ser. 48:16 (Aug.), 1952.
18. Bremer, J. A. Social Psychiatric Investigation of a Small Community in Northern Norway. Acta psychiat. et neurol. Suppl. 62:1–166, 1951.
19. Cohen, M. E., and White, P. D. Life Situations, Emotions, and Neurocirculatory Asthenia (Anxiety Neurosis, Neurasthenia, Effort Syndrome). Psychosom. Med. 13:335–357, 1951.
20. Pollitt, J. Natural History of Obsessional States. A Study of 150 Cases. Brit. M. J. 1:194–198, 1957.
21. Böök, J. A. A Genetic and Neuropsychiatric Investigation of a North Swedish Population with Special Regard to Schizophrenia and Mental Deficiency. Acta genet. et statist. med. 4:1–100, 1953.
22. Larsson, T., and Sjögren, T. A Methodological, Psychiatric and Statistical Study of a Large Swedish Rural Population. Acta psychiat. et neurol. Suppl. 89:1–250, 1954.
23. Robins, E.; Gassner, S.; Kayes, J.; Wilkinson, R. H., Jr.; and Murphy, G. E. The Communication of Suicidal Intent: A Study of 134 Cases of Successful (Completed) Suicide. Am. J. Psychiat. 115:724–733, 1959.
24. Kraepelin, E. Manic-Depressive Insanity and Paranoia. Translated by R. M. Barclay. Edited by G. M. Robertson. Edinburgh, Scotland: E. & S. Livingston, 1921.
25. Bellak, L. Manic-Depressive Psychosis and Allied Conditions. New York, N. Y.: Grune & Stratton, 1952.
26. Lisansky, E. S. The Woman Alcoholic. Ann. Am. Acad. Polit. & Social Sc. 315:73–81, 1958.
27. Vital Statistics of the United States, 1955. Vol. II. Mortality Data. Washington, D. C.: Gov. Ptg. Office, 1957.
28. Fetterman, J. L.; Victoroff, V. M.; and Horrocks, J. A Ten-Year Follow-Up Study of Electrocoma Therapy. Am. J. Psychiat. 108: 264-270, 1951.
29. Langelüddecke, A. Über Lebenserwartung and Rückfallshäufigkeit bei Manisch-Depressiven. Ztschr. Psych. Hyg. 14:1, 1941.
30. Slater, E., Zur Erbpathologie des Manisch-Depressiven Irreseins: Die Eltern und Kindern von Manisch-Depressiven. Ztschr. Ges. Neurol. u. Psychiat. 163: 1–47, 1938.
31. Schulz, B. Sterblichkeit Endogen Geisteskranker und Ihrer Eltern. Ztschr. menschl. Vererb. -u. Konstitions lehre. 29: 338, 1949.
32. Campbell, J. D. Manic-Depressive Disease. Clinical and Psychiatric Significance. Philadelphia, Pa.: Lippincott, 1953.

The authors are associated with the Department of Psychiatry and Neurology, Washington University School of Medicine, St. Louis, Mo.

This paper was presented before the Mental Health Section of the American Public Health Association at the Eighty-Sixth Annual Meeting in St. Louis, Mo., October 30, 1958.

Actually, the problem of ionizing radiation is not entirely new. It had been recognized along certain lines by percipient health workers more than two decades ago. Here is an interesting account of such experience in a local health department.

TWENTY YEARS OF COPING WITH IONIZING RADIATION AT THE LOCAL HEALTH DEPARTMENT LEVEL

William G. Fredrick, Sc.D., F.A.P.H.A.

THE DISCOVERY of ionizing radiation in the electromagnetic spectrum occurred just before the turn of our century. In a very short period it was found that these radiations could damage man's health and shorten his life. By the mid-nineteen thirties, the clear, bold outlines of the injuries and the approximate quantity of radiation required to cause them were well delineated. Most of this picture, except the genetic aspect so ably filled in by Nobel Prize winner Muller, was sketched from workers exposed to ionizing radiation whose maimed bodies and shortened life spans provided the master model. All too often it has been the lot of the world's workers to serve in this capacity whenever a new chemical or physical stress has been introduced into man's environment.

The Bureau of Industrial Hygiene of the Detroit Department of Health was established in 1936. Before the year had ended, it was investigating possibilities of radiation sickness among workers repairing watch dials lettered with luminous paint containing radium. Already, instrumentation and standards for permissible exposure were available which permitted the inauguration of environmental control measures good enough to minimize the health hazard from this occupation.

The year 1939 marked the introduction of industrial radiography into Detroit. Some installations used radium sources but most used high-voltage x-ray equipment. By 1943, all such exposures were brought under adequate control by the Health Department, with the utmost cooperation on the part of management. Many of the larger such work places also employed diagnostic x-ray equipment in their medical departments. Industrial hygiene studies made of exposures of workers operating this equipment clearly demonstrated needless absorption of x-ray energy. But inasmuch as this equipment was being operated in a manner long established in the healing professions, it proved extremely difficult to reduce exposure by altering equipment and revising work operations. Similar difficulties were encountered when a few hospital installations were studied. We were obviously too far ahead of our times in this industry to get profitable results for the expended staff time.

In 1945, we turned our attention to x-ray fluoroscopic shoe-fitting machines, of which there were some 350 in Detroit shoe stores. Even if one granted that there was a health reason for using these devices, it was obvious that most of them exposed employees and the public to

larger quantities of x-ray than was necessary to accomplish the intended purpose. It was evident that most of the devices were used for merchandising purposes, and outright prohibition of their use would cause no great hardship to anyone. On the other hand, in 1945, neither the consuming public nor the shoe merchants were yet aware of the health implication of unnecessary exposure to x-rays. Prohibition was an extremely drastic step, especially as it was possible to modify the design and use of the devices in such a manner as to reduce the exposure to an acceptable level. In general, it is better to regulate and educate rather than to prohibit, so we elected to regulate and educate. Under this policy, by the end of 1946, half of the devices were out of use. By 1950, less than 100 were in service and on our last survey in 1957, less than 30 devices were present in Detroit shoe stores, and only a half dozen were actually in use. All this was accomplished without passage of any specific ordinances. Our regulations were set up informally under the broad powers of the Department of Health. Specific health legislation was not established in Michigan until 1958. This legislation is likewise under the broad regulatory powers of the state commissioner of health.

By 1954, general awareness of the radiological health problem in Detroit had advanced to the point where maximum accomplishment with minimum expenditure of staff time could be achieved in large hospital installations, and this program was started. In January, 1958, this activity was extended to installations in the private offices of medical and dental practitioners. This is an ambitious undertaking because, in any jurisdiction, there are so many of them in proportion to available staff to do the job. Detroit has approximately 1,000 dental x-ray installations and probably an equal number of medical installations. A well trained industrial hygienist can inspect about four or five dental installations or two to three medical installations a day. Hospitals and large clinic installations require from one to five days.

Administratively, one must ask, are these inspections profitable and necessary to protect workers in the healing arts and the public from unnecessary exposure to ionizing radiation? The answer is: Yes! About 75 per cent of the dental installations need improvement. To date, 70 per cent of the installations inspected had inadequate collimation of the direct x-ray beam, about an equal proportion lacked a filter to remove long-wave length radiation which is diagnostically useless. Many units have defective timers, too short control cords, or are poorly located. Some equipment is hopelessly obsolete and must be replaced. Our experience with medical equipment is not as extensive, but experience up to now indicates that it too is in much need of improvement.

Inspection of x-ray installations used in the healing arts is now timely. Reception of the service is excellent and compliance with needed improvements is prompt. Individual and public awareness of the problem has developed to the point where inspection of x-ray equipment is a very profitable and efficient official public health procedure. No special legislation is needed—only competent field personnel to do the job.

One may properly ask, is inspection necessary? With such awareness, on the part of users of x-ray equipment, cannot voluntary action accomplish the job? Human nature and behavior being what it is, our experience indicates a strongly negative answer. Most practitioners need the assistance and incentive which results from direct contact with an experienced public health worker adequately trained in radiological health.

Promotion of the safe use of radioactive isotopes has so far been far less time consuming than the safe use of x-ray equipment, due to the excellent

cooperation of the Atomic Energy Commission and the relatively small number of users. Interestingly enough, it has been our experience that reasonably close supervision is required not to prevent injury from routine usage but from what those not well experienced with human foibles would call sheer stupidity, ignorance, or gross lack of projective imagination and common sense. An official health agency can never safely turn its back on the use of ionizing radiation in its jurisdiction for very long or gross misuses and serious accidents will result.

The time is now at hand to obtain maximum results from a given amount of effort in official public health activity in radiological health. Furthermore, this responsibility must be accepted if the public is to be protected and, perhaps more important, be reassured that they can live healthfully in the Atomic Age. True, expensive special equipment and well trained personnel are required, but health officers cannot in good conscience neglect this responsibility with the hope that someone else will do it. There has been an alarming tendency to parcel off responsibility for many aspects of environmental health to non-public health agencies, e.g., noise abatement, accident prevention, air pollution, protection against ionizing radiation, food and drug purity, and stream and water pollution. While this is better than no control at all, it cannot give the public the coordinated protection afforded by trained public health workers integrated in a modern health department. Finally, the more local the administrative unit, providing it is properly staffed and equipped, the more efficient will be its operation. The closer we are to our people, the better the job we can do.

Dr. Fredrick is director, Bureau of Industrial Hygiene, Detroit Department of Health, Detroit, Mich.

This paper was presented before a Joint Session of the Conference of Municipal Public Health Engineers, Conference of State Sanitary Engineers, Engineering and Sanitation, Health Officers, and Occupational Health Sections of the American Public Health Association at the Eighty-Sixth Annual Meeting in St. Louis, Mo., October 29, 1958.

This study is concerned with the use of ultraviolet irradiation for sterilizing or inactivating viruses and bacteria in biological fluid preparations. Of special interest for public health are a discussion of the biological effectiveness of ultraviolet irradiation of fluids, and a description of an apparatus for uniform exposure of microthin films to irradiation.

THE ULTRAVIOLET IRRADIATION OF BIOLOGICAL FLUIDS IN THIN-FLOWING FILMS

Franz Oppenheimer, Ph.D.; Egon Benesi, M.E.; and Alton R. Taylor, Ph.D.

THIS REPORT sets forth the evolution of the "Centrifilmer," a precision instrument in which biological fluid suspensions may be exposed in the form of thin-flowing films to controlled ultraviolet irradiation. In recent years, research on practical applications in the production of vaccines has shown that most effective results are obtained when the radiation is combined with other chemical and physical treatments for inactivation. Correlation of this combination-inactivation concept with the resulting improvement in the immunogenic and stability potential of antigens will be discussed.

Principles of Ultraviolet Irradiation in Biological Fluids

The principal ultraviolet mercury resonance spectrum bands of practical biological importance, which occur at 1849 and 2537 A, are produced in high intensities by low pressure mercury arcs and vapor discharges. The 1849 A band has not only a greater lethal effect upon microorganisms but also a greater chemical activity since it produces ozone and peroxide. Because this band has relatively little penetrating power, or is absorbed rapidly both in air and liquids, its use requires lamps with quartz envelopes. In most applications directed toward large-scale inactivation, low pressure discharge lamps with vycor glass envelopes have been used. Irradiation below approximately 2200 A is cut off by this glass, thereby eliminating the emission of the ozone and peroxide-producing radiation. Such lamps, which contain neon and argon as starting gases, emit 85-95 per cent of their ultraviolet radiant energy in the 2537 A band.

The lethal effect of ultraviolet energy upon microorganisms suspended in liquid media is thought to be associated with the absorption of the ultraviolet photons within the nucleoproteins.[1] The ultraviolet radiation energy dissipation within tissue (microorganism) is by excitation rather than by ionization; the latter is the primary action of high energy radiation. In more complex organic molecular decomposition and in biological actions of irradiation, such as

the inactivation of viruses and the killing of bacteria, an excitation by ultraviolet energy is less effective than an ionization. Although ionization itself, the ejection of electrons from atoms, or dissociation—when the bonding electrons shared between atoms of a molecule are split—may be the direct cause of the biologically significant results of irradiation, it is more likely that secondary chemical changes caused by the ionization produce the biologically important effects. Excitation, on the other hand, may be considered to be the raising of an electron to a higher energy state with subsequent return to normal. The eventual result could be disruption of bonds, as is the case with ionization, but in general, excitation may be considered to induce a somewhat less drastic, possibly progressive, chemical change directly.

It is also important to consider the difference in the spatial distribution of the energy dissipation of ultraviolet radiation as compared to ionizing or radioactive emission. Since the absorption of ultraviolet light depends upon the molecular structure, it is different for nucleic acids and proteins. No such difference is obtained with ionizing radiation; here the effect is determined by the atomic number of the atoms involved. With ultraviolet energy, the excited atoms are spatially distributed in a homogeneous manner, with no tendency to occur in groups or to produce secondary ionization. Ionizing radiation, on the other hand, may be localized along definite paths and, thus, may be concentrated in clusters or columns.[1]

Experimentally, a pure suspension of viruses or bacteria in a nonabsorbing medium may be treated with a given amount of incident ultraviolet energy for a given period of time, which is determined by physical measurement, and from which the total amount of energy absorbed by the suspension can be calculated. The total energy absorbed may then be divided by the total number of organisms, or the total volume of protoplasm involved, to obtain the net energy absorbed per organism or unit volume. Correlated with biological tests, a definite inactivating or sterilizing dose of the ultraviolet can be formulated. Practically, such conditions are difficult to obtain; many variable factors are associated in routinely treated biological suspensions which preclude the exact determination of the biologically effective proportions of any given quantity of incident ultraviolet energy applied. Depending on age, physical state, and so forth, the quantity of energy necessary to inactivate microorganisms varies widely from species to species, and within species. Media constituents and associated protein materials affect the over-all net absorption of energy. This has been discussed and illustrated to some degree in a previous publication.[2]

The primary problem has been one of producing sterilization and/or inactivation of delicate microorganisms (bacteria and/or viruses) contained in fluid media with minimum deleterious effects upon the media and the associated constituents. At the same time, the maximum antigenic potential of the suspended organisms for use as antigens must be retained. Conditions have to be established in each individual case so that a safe minimum of ultraviolet energy can effect, consistently, the desired biological action. A certain amount of energy, intense enough to affect the microorganisms, must reach every portion of the suspension, and the net photon density throughout the fluid should vary within only a very small range. The application of ultraviolet energy, not intense enough for complete killing or sterilization, apparently exerts a stunning or sensitizing effect upon viruses or microorganisms. If such treated suspensions are then exposed to further unfavorable conditions, complete

sterilization or inactivation can be achieved more readily.[3] Ultraviolet treatment has been shown to result in chemical changes within the organism.[2] When the effects of ultraviolet radiation are combined with mild heat (37°-45°C),[4] the chemical action of formaldehyde,[5] or beta-propiolactone,[6,7] the combinations of treatment are more effective in producing inactivation than any of the respective procedures utilized separately.

Developmental: Ultraviolet Irradiation of Thin Liquid Films

A. Statically Enclosed Films—Quantitative work on the inactivation of bacteria and viruses by ultraviolet prior to the early 1940's and, even more recently, was carried out in quartz flasks,[8] cells,[9] or open dishes,[10] with the depth of the fluid to be irradiated varied over wide limits. Even with the expedient of stirring the suspensions, data from such experiments conflicted and were difficult to interpret. The progressive irradiation, always necessary under such conditions, required prolonged exposures in terms of time. Fifteen to 40 minutes were required to produce a six- to seven-log loss in the titer of equine encephalomyelitis virus,[9] the time depending upon the concentration of the virus. Attempts to irradiate biological fluids in the form of thinly spread films have been made by a number of investigators.[9,11,12] Ultraviolet irradiation is rapidly absorbed even by very thin layers of fluids; therefore, the problem resolved itself into the development of suitable equipment so that large volumes of material could be exposed in thin films under fixed conditions to controlled intensities of the irradiation. The fluid film must be thin enough so that the surface layers adjacent to, or facing the source of irradiation, are not overexposed, whereas the deepest layers must receive sufficient irradiation to produce the desired biological effects.

The flat quartz cell (Figure 1A) with channels 8 to 25 mm in width, and depths of 100, 150 and 200 microns, provided a device whereby small volumes of liquid could be irradiated fairly uniformly at slow flow rates. However, the flow in such cells was not completely uniform, since the rate was highest in the central part of the cell, while at the quartz surfaces, and especially near the fused edges, the rate was slower and irregular.

To overcome some of these irregularities, a circular cell (Figure 1B) was constructed with two concentric fused quartz cylinders. High precision quartz grinding was necessary to provide a uniform channel depth. A circular moat was formed at each end with the inlet and outlet tubes placed tangentially to produce a concentric spinning action to the flowing fluid. These cells were made with 100, 150, and 200 micron-channel depths, and the light source (low pressure quartz mercury arc lamp, 10 microns) was passed centrally through the inner cylinder. This type of cell was fragile and the cost high. Because sterilization results within limits were good, such cells were used for many years in the production of highly antigenic rabies vaccines,[13] and also for the irradiation of pathogens and plasma.[14-19] It was apparent, however, that satisfactory conditions for volume irradiation could not be achieved by the restriction of the flowing films within rigidly fixed cell type units.

B. Centrifugally-Produced Films—Attention was directed toward the development of a centrifugal device wherein thin-flowing films of uniform but variable thickness could be produced. It was necessary at the same time to develop ultraviolet energy generators capable of producing the required energy. The basic design featured the use of centrifugal force to create and also to drive the liquid film. Several types of irradiation equipment had been de-

Figure 1—A. Two Types of Flat Quartz Irradiation Cells Which Could Be Mounted at Varying Distances (usually 1 cm) from the Ultraviolet source

B. Cylindrical Quartz Cell Through Which the Ultraviolet Source Passes Centrally

scribed which utilized centrifugal force to create the films of fluid, but with gravity providing the only means of moving the film.[9,11,12] Because centrifugal force is opposing gravity flow in this type of apparatus, films below approximately 100 microns in thickness are difficult to maintain satisfactorily. In addition, the exposures cannot be varied and controlled to any great degree, and there is difficulty in maintaining operating temperatures and uniform ultraviolet energy output.

The host of requirements which must be satisfied in order to apply and control ultraviolet irradiation energy for the satisfactory treatment of biological fluids[2] may be divided into: (a) those associated with the biological material to be irradiated; and (b) those related to the irradiation equipment itself.[2]

The apparatus described below (the "Centrifilmer") was developed over the past ten years; the original concept was evolved from the experiences with the earlier quartz cells and their limitations. The Centrifilmer embodies the combined efforts and thinking of Michael Reese Research Foundation scientists, General Motors research staff engineers, and Parke, Davis and Company research personnel. The basic design problems and construction details of the series of experimental models have been outlined briefly by Benesi.[20] A description of the practical and efficient unit now being

used for routine applications follows.*[21-24] Figure 2 is a photograph of the Centrifilmer completely assembled.

The Centrifilmer: Principles of Performance and Components

The heart of the centrifugal filmer is the balanced rotating conical stainless steel cup or bowl (A, in Figure 3) in which is suspended the ultraviolet lamp unit (B, in Figure 3) to provide the radiant energy. The liquid to be irradiated is brought to the inside bottom of the bowl at a controlled rate of flow, where, under the centrifugal force, it spreads and rises up the inner walls of the bowl in a smooth film. It then flows over the rim of the cup and is caught by the collector (C1 and C2 in Figure 3) with subsequent discharge into receivers connected at D (Figure 3). To obtain uniform, free-flowing thin films of liquid, the design of the filmer and the radial speed of the bowl must satisfy several factors. Since the liquid leaves the top

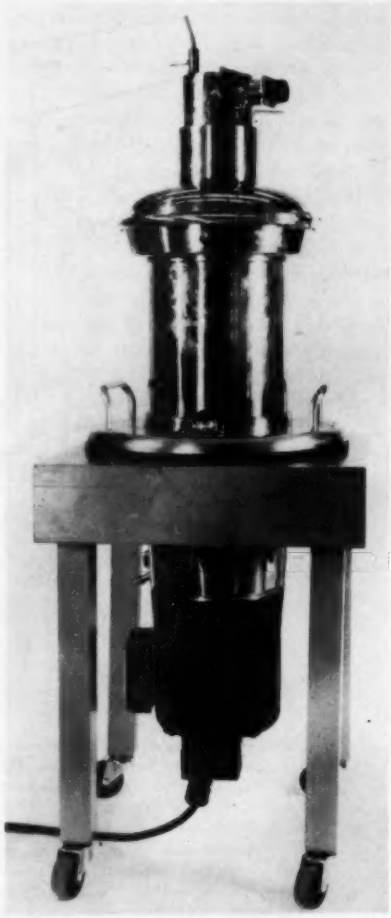


Figure 2—The Completely Assembled Centrifilmer Unit Is Approximately 36 Inches in Over-All Length and Weighs 120 Pounds. The Inter-relations of the Various Components Is Illustrated in the Following Figures

* Investigators interested in the clinical use of blood serum and associated vaccine products have sought for many years to develop equipment for the optimum utilization of the lethal effects of ultraviolet irradiation. The late Dr. Sidney O. Levinson, Dr. A. M. Wolf of Michael Reese Research Foundation, and Dr. Howard Shaughnessy of the Illinois Department of Health, carried out pioneer work beginning in the early 1940's. Later these workers were joined by Dr. Fred D. Stimpert, director of microbiological research, and the late Homer C. Fritsch, vice-president, and the Virus Research Staff of Parke, Davis and Company in efforts to work out the details of practical applications. In 1948, E. J. Wolff, assistant department head, and C. J. Kinsey, general supervisor of drafting, General Motors Research Staff, joined the effort, and with the cooperation of C. McCuen, vice-president and general manager, E. V. Rippengill, assistant general manager, and T. C. VanDegrift, head, Special Problems Department of the Research Staff of General Motors, a series of experimental filmer units were built and tested.[20] The recently published application and orientation studies[2-5, 21-24, 27, 29, 30, 38, 39] were carried out with the current model. The authors would like to express their appreciation to Howard Haines of the General Electric Lamp Company, and Dr. L. J. Buttolph, formerly associated with the General Electric Lamp Company, for their cooperation in the development of the special G18T6 ultraviolet lamp. The authors also wish to acknowledge the cooperation and painstaking efforts of all members of the respective organizations whose contributions made these studies possible, and especially the assistance of Lorraine Gelinas and Cynthia L. Winans in the preparation of the manuscript.

of the cup with a radial velocity, the centrifugal forces have to be restricted to a magnitude which does not cause excessive foaming or denaturation of proteins in the irradiated liquid as it is leaving the cup and striking the collector. Further, the collector cover surface (C1) was designed to produce slow deceleration of the liquid into the collector trough. The film thickness, controlled primarily by the flow rate, has to be such that the ultraviolet energy intensity provided by the lamps is sufficient to penetrate the film layer. The dwell

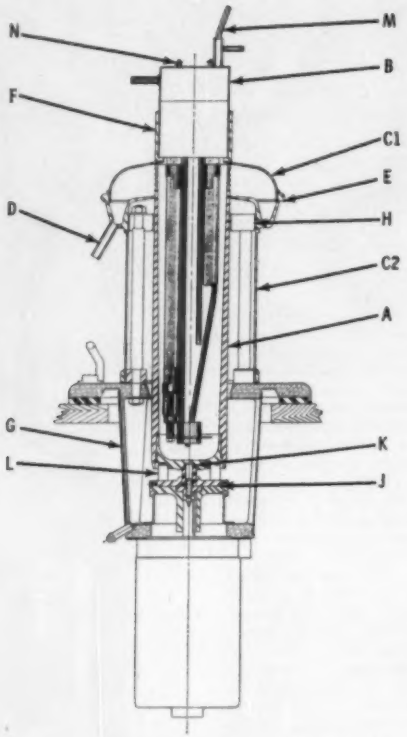


Figure 3—Schematic of Assembled Filmer. A, The Bowl, Inside Walls Conical, 2° Included Angle. B, The Lamp Holder (see Figure 6 for detail). C1 and C2, the Collector Cover and Housing with Discharge Outlet, D. E, Clamp Ring to Insure Liquid Tight Fit of C1 and C2. F, Cylindrical Lamp Holder Housing, Integral with Collector Cover, C1. G, Flanged Brass Casting which Serves as Table or Bench Mounting, Drive Motor Installed at Bottom. H, Upper Support Frame Carrying the Teflon Guide Pads to Support Bowl in Equilibrium Operating Position. (This frame shown clearly in Figures 4 and 5.) J, Drive Adaptor on which are Mounted Two Drive Lugs, L, and the Hemispherical Teflon Thrust Bearing, K. N, Indicates One of the Guide Tracks for the Mounting of the Phototube Monitor Unit, see Figure 6. M Is the Upper End of the Fluid Feed Tube with Its Outer Concentric Jacket which Serves as an Inlet to Introduce the Nitrogen Gas to Provide an Inert Atmosphere

time of the fluid within the bowl has to be of long enough duration to permit adequate exposure of the agent in question to the irradiation energy. The liquid is retained within the irradiation area of the bowl between 0.2 and 2.0 seconds, depending upon rate of rotation (RPM) and the included angle of the bowl wall. The vertical fluid velocity and the rate of flow, coupled with the density and viscosity of the fluid, are the major factors which determine the average thickness of the liquid film which wets the entire inner surface of the cup.

A. The Bowl—The bowl, 16 inches long with an upper inside diameter of 3¾ inches, is made entirely of stainless steel in two sections: a bottom plug section and the slightly conical wall section, Figure 3. The latter is machined from a rough commercially available tubular section of 304 stainless steel, then ground and polished to exact size with the required inner taper (2° included angle in the final design) and fitted with an inside screw thread at the smaller end. The bottom plug section is machined in a similar manner and a screw thread is cut into its outer rim to match the corresponding thread in the tubular bowl section with a shrink-fit. The sectioned construction of the bowl avoids difficulties in machining a smooth, even-tapered surface in a long tube closed at one end. The inner lower section of the bowl is finished by grinding and polishing a radius where the bottom joins the tapered wall. The transition of liquid flow from the horizontal to the vertical film is then accomplished with a minimum of ripples. The upper rim of the bowl is square with a slightly beveled edge which produces the best separation of the liquid leaving the bowl. The upper end of the outside wall (Figures 3 and 4) has a series of circular grooves which provides the operator with an easy grip during the removal from and insertion of the 15-pound bowl into the driving mechanism. Semicircular "scallops" are

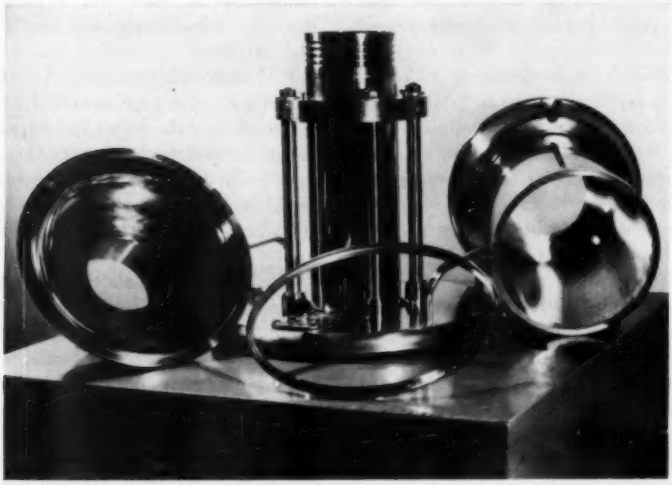


Figure 4—Filmer Unit with Collector Cover (C1 of Figure 3) and Housing (C2) and Clamp Ring (E) Removed. The Bowl Remains in the Operating Position Supported by the Upper Support Frame and Ring (H)

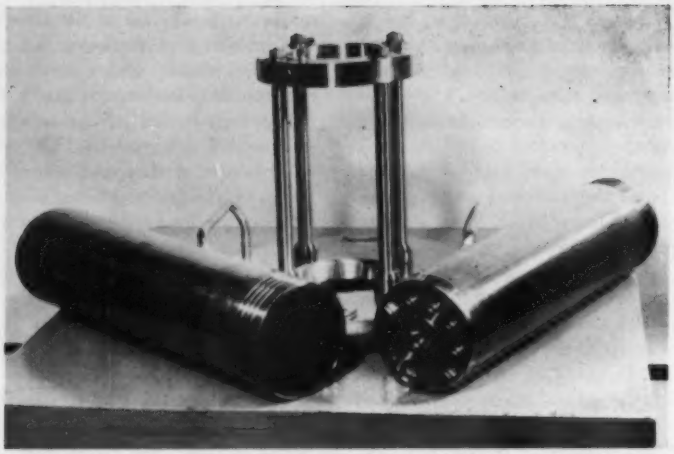


Figure 5—Two Views of the Filmer Bowl Showing (on right) the Semicircular Scallops Machined Into the Outer Bowl Bottom. These Engage the Driving Lugs (L) Shown in Figure 3

machined symmetrically into the under side of the bottom section, Figure 5. Two of these simultaneously engage driving lugs on the adaptor mounted on the drive shaft. The use of the 10 "scallops" facilitates engagement of the bowl and the driving adaptor during assembly.

B. Collector and Collector Cover—The collector cover, C1, is attached to the collector proper by a clamping ring at E, in Figure 3. The fit is liquid tight and a torus section with a highly polished inside surface is formed. It conforms to the path of the liquid leaving the rim of the bowl. The tangential transition between the path of the emerging liquid and the curvature of the cover minimizes the effect of any impact of the liquid on the cover. The liquid leaves the bowl in a pinwheel fashion, is gently deflected downwards, and is caught in the trough of the collector from which it leaves through an outlet tube, D, at the bottom of the trough. A cylindrical housing, F, on top of the cover provides the support for the lamp holder (B) which is suspended into the bowl during operation. The lower part of the collector (C2) forms a housing for the Centrifilmer and a support for the collector cover and lamp assembly (see Figure 3). The various parts of the unit are removable as shown in Figure 4 for cleaning, autoclaving, and sterile assembly purposes.

C. Drive Mechanism—A ¼-horsepower induction type motor (1,750 rpm) is installed at the lower end of a flanged chrome-plated brass casting, G, in Figure 3. The large 12-inch diameter flange of this casting serves as a base for table or bench mounting of the entire drive unit. It also provides the base for the frame which supports the rotating bowl by means of the three upper guide pads symmetrically placed in the upper support frame (H, Figure 3). In addition, this upper framework (Figures 4 and 5) serves to center the detachable collector cover and housing over the bowl during the assembly operation.

Attached to the motor shaft is a tightly fitting adaptor (J) which can be lowered or raised so as to insure proper spacing of the top edge of the bowl with

respect to the collector cover. A spacing of approximately 0.040 inches between bowl rim and collector cover is required for proper fluid discharge. The adaptor is made in two sections to permit lateral adjustment (as well as vertical) by means of set screws in order to obtain perfectly true running conditions between the adaptor and bowl assembly. The adjustable section of the adaptor carries the semispherical nylon support (K), the thrust bearing carrying the bowl when in operation. In addition, two rubber covered driving lugs (L) are fastened to this section permitting the transmission of the driving torque into the bowl by means of the semicircular "scallops" in the bowl bottom (Figure 5).

The bowl, positioned on the nylon button and driven by the driving lugs, rotates in a labile equilibrium around its mass axis. It is steadied by three graphite impregnated teflon buttons which are equally spaced in the stationary supporting ring (H, in Figure 3) in the proximity of the upper edge of the bowl. These buttons are backed by weak coil springs damped with silicon fluid and provide a slight bearing pressure on the outside surface of the bowl. With this arrangement the freely suspended bowl, after being balanced properly, rotates vibration-free and produces a smooth and uniform microthin liquid layer over the inner bowl wall during the operation of the Centrifilmer.

D. Lamp Holder and Feed Tube—The lamp holder (Figure 6) is designed to receive six tubular type GE18T6 vycor or quartz lamps. It consists of a head and a bottom part which are interconnected by six equally spaced cooling water tubes. These tubes carry the cooling water introduced into the upper chamber alternately downward and upward, and finally out through an outlet also located in the head chamber. The six lamps are fitted into receptacles at the head and at the bottom of the holder. The cooling tubes are located behind each lamp. Specially shaped copper sleeves are silver-soldered to the cooling tubes (Figure 6) so as to cover the area of each lamp occupied by the electrodes. This provides sufficient heat transfer from the lamp electrodes into the cooling water to allow the lamps to be operated at optimal temperatures and internal pressure. This point is discussed in more detail below. Installation and removal of the lamps is accomplished by unscrewing a nut at the bottom and removing the ring supporting the lower electrical connections.

The electrical connections and water chambers in the head are arranged so as to provide a central opening, $\frac{5}{8}$ inch in diameter, through which the interior of the rotating bowl may be viewed; a quartz window covers the upper end of this opening and in routine operation provides a viewing port over which the monitoring cadmium phototube (see below) may be attached. The mounting guides are indicated by N, in Figure 3.

The fluid feed tube (M, in Figure 3) is introduced off center through another hole in the lamp-holder head. It continues straight down between two lamps and is then bent at an angle to pass centerward so as to position the tube outlet 1 cm above the center of the bottom of the bowl. A concentric outer tube surrounds the upper 20 cm of the feed tube and provides for the introduction of nitrogen gas into the Centrifilmer.

The entire lamp holder is made of brass and copper which is chrome-plated by the Nichem process. To place it in its operating position, it is lowered into the bowl through the circular opening in the collector cover until the head portion of the lamp holder becomes seated in the cylindrical section attached to the collector cover. Precision machining makes possible interchangeability of lamp holders and bowls.

E. Ultraviolet Lamps—To obtain the

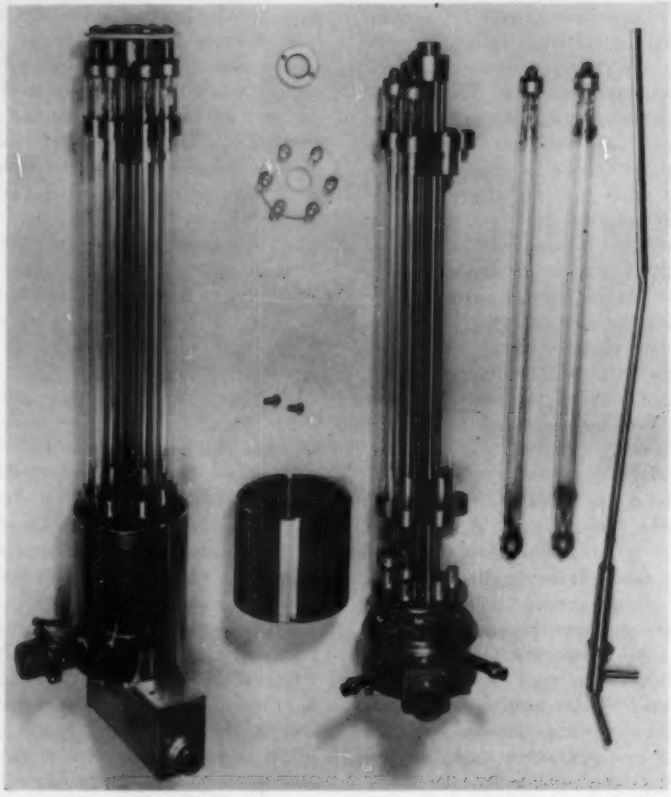


Figure 6—Completely Assembled Lamp Holder with Phototube Monitor Mounted Is Shown on the Right. To the Left the Lamp Holder Is Disassembled and Two Lamps Have Been Removed to Show More Clearly the Form and Mounting of the Lamp Electrode Cooling Sleeves

optimum emission of the resonance spectrum of mercury, the internal mercury pressure of the GE18T6 lamps must be held between 8 and 11 microns' pressure. This corresponds to an internal lamp temperature of approximately 50°C. If the mercury pressure rises or falls the resonance radiation at 2537 A diminishes; therefore, in order to maintain uniformity in these two essentials it becomes necessary to have uniform amounts of mercury within the lamps and to control the heat dissipation from the electrodes.

An extended tongue of the copper electrode-cooling sleeves behind each electrode location (see Figure 6) serves to provide a "cold" spot on the inner surface of the lamp envelope so that the activated mercury in the arc stream will tend to condense at this relatively cold point in the lamp central to the electrodes. This was found to facilitate more rapid equilibration of lamp energy

output with repeated starting, and also to prolong the useful lamp life. The optimal ultraviolet energy output of the lamps is obtained when the cooling water from an automatically controlled constant temperature bath is maintained at approximately 30°C. In practice, new lamps tend to have a somewhat high and variable energy output during the initial 20-30 hours of operation. Such lamps are routinely "burned-in" for a period of 24-48 hours after which the mercury becomes well distributed and the lamps then stabilize themselves and will retain a uniform output within close limits for periods of 200-300 hours or even longer.

The power supply for the operation of the lamps consists of a variable voltage stabilizer (Solavolt Transformer) which feeds a series of instant start ballasts which have been selected for uniformity. An individual ballast is provided for each lamp, the secondary output of which approximates 600 volts. The lamps are wired in series parallel so that each of two lamps can be operated on either a single or double ballast. The supply voltage and amperage are metered and recorded. The effective incident ultraviolet energy (the energy actually impinging on the film surface) produced by the lamps can be varied from approximately five watts to over 30 watts by varying the number of lamps used and the input voltage and current. Each of the GE18T6 lamps has a rated output of six watts of ultraviolet energy. However, when the six lamps are operated as a group in the present holders they can provide incident energy values considerably in excess of this.[2]

F. Calibration of Lamps and Measurement of the Incident Ultraviolet Energy—Factors which are inherent in the design of the lamp holder and its location within the spinning bowl when in operation, contribute to the ultimate amount of ultraviolet energy impinging upon the film surface. Only energy which is actually absorbed into the fluid being irradiated is capable of killing or causing biological changes. Although measurements by means of uranyl-oxalate actinometry[25] have revealed that this method provides an accurate and reproducible method for determining the amount of ultraviolet energy absorbed in films of electrolyte solutions, a purely mathematical application of such results cannot be transferred to the irradiation of other liquids, especially those which contain amino acids, proteins, and infectious agents. Since there is a complex distribution of energy absorption among the different components in such biological media, any proportionality would be difficult to determine.[2,3]

Other and more applicable methods have been used in order to evaluate the amount of incident energy available at the film surface or bowl wall.

(a) *Geometric Calibration*

In an earlier report[2] details of a geometric method for the determination of incident energy levels, and its application for the inactivation of poliomyelitis virus in tissue culture fluids, were discussed. An inverse relation of the lamp diameter to the diameter of the point of incidence from the lamp (the film or bowl wall) was used and the relative incident energy calculated. It was found that reflection within the rotating bowl had to be considered, as well as other factors, and that a simplified geometric relation[2] could be used to closely approximate the summated incident intensity obtained under operating conditions.

(b) *Slit Bowl Measurements*

In order to verify the geometric calibration and establish a quantitative relationship between the primary lamp calibration and the actual summated energy intensity obtained at the bowl wall under operating conditions, a stainless

steel replica of a bowl was built with a vertical slit 0.3 cm x 26.6 cm in the wall. The replica was provided with a copper cooling coil on the outside surface so that operating temperature conditions could be simulated.

After studying various methods of calculation, a scanning method appeared to be the most feasible means of establishing the intensity values for the total intercept area. The emission from the slit was measured with the Archer meter at 200 cm over an arc of 180° in 15 degree increments. The point directly opposite the slit opening is designated 0°, and the arc scanned extends 90° to right and left from this point. The meter was not sufficiently sensitive to record the intensities for the terminal 5° at each end of this arc and extrapolation was used. The slit was scanned both horizontally and vertically.

Method of Calculation

(1) Meter readings at 15° increments between 15° and 165° and the increment intensities averaged.

(2) Spherical area:

r = radius = 200 cm

h = height of spherical segment

$2\pi rh = 251{,}000$ cm^2

(3) Reduce the increment average intensity from the total slit area (8.0 cm^2) to average microwatts/cm^2 of spherical segment area.

(4) Determine total microwatts/cm^2 at film or bowl inner surface: Average microwatts/cm^2 of spherical segment area times spherical segment area = microwatts/cm^2 incident to film or bowl surface.

Example

Average increment readings from total slit area = 1.11 microwatts. $\frac{1.11}{8} = 0.138$ microwatts/cm^2 of spherical segment area. 0.138 x 251,000 = 34,600 microwatts/cm^2 total energy incident to the film or bowl wall at 0°.

The corresponding average value obtained with the earlier geometric calculation[2] was 34,200 microwatts/cm^2 total energy incident to the bowl wall.

(c) *Cadmium Phototube Monitor*

This method is based on the adaptation of an extremely sensitive and stable cadmium phototube and electrometer circuit[26] for the control and measurement of ultraviolet energy under operating conditions in the Centrifilmer.* A monitoring device was desired which could be utilized: (a) for the routine determination of lamp energy emission, and (b) to provide a continuous recording of the energy during operation of the Centrifilmer. This means that the lamp calibration values would be related directly to the recorded operating energy emission. The component parts are assembled in a sealed aluminum head suitable for mounting in a fixed position at a given distance from the lamp for calibration purposes, or on top of the lamp holder during operation so as to receive energy emission from inside the bowl through the circular opening in the top of the lamp holder.

The phototube is initially calibrated against a standard ultraviolet lamp. A Leeds Northrup Speedomax 10 milliampere recorder is used to read the total intensity. Full scale on the recorder represents 50 microwatts; the standard lamp reads 44.6 microwatts at one meter distance. The phototube aperture is adjusted so that the 44.6 microwatt standard lamp reads 44.6 (8.92 divisions) on the recorder scale. The lamp holder (containing six lamps) is placed within the slit bowl and scanned horizontally and vertically. The results with the cadmium phototube are in complete agreement with both the geometric and slit bowl methods of calibration. A comparison of the incident energy values at the film or bowl wall obtained by the various methods is shown in Table 1.

In general, it may be stated that the multiple system of lamps operating within the bowl represents a "cavity"

* Gardner Associates, Inc., Scotia, N. Y.

Table 1—Comparative Incident Energy Values Obtained Using Various Systems of Measurement

Method	Incident U.V. Energy Microwatts/Cm²	Incident Watts*
Geometric	34,200	25.5
Slit bowl	34,600	25.7
Barrier cell	33,700	25.4
Cadmium Phototube	34,300	25.5

* Incident Watts—the total watts of incident ultraviolet intensity at the effective film area (upper ¾ of internal bowl surface). See text and Reference 2 for a discussion of the distribution of this energy.

system. Only a part of the ultraviolet energy produced actually strikes the film at right angles. The remainder strikes at various angles where reflections cause random variations of the intensity. Calculation of the ultraviolet energy absorption within the film is difficult and would be highly inaccurate. As was discussed in the earlier publication[2] the quantity of incident energy delivered to the film can be measured and controlled. The practical correlation and translation of this applied incident energy into inactivation, or rather into alteration effects upon specific biologic agents contained in the fluid being irradiated, is dependent upon biological measurements.[2,27] That is, titration of biological activity lost, or the safety test which signifies complete loss of activity, with their inherent limitations and variability, will remain the final critical line of appraisal.

G. Measurement of Film Thickness, Excursion Rate of Fluid in Centrifilmer—In actual biological applications the irradiation effects are governed by a number of interacting factors. The viscosity, density, and composition of the liquid which is being irradiated are important considerations, but only the liquid flow rate and the centrifugal force can be varied in a practical manner. Therefore, these are the primary determinants of the film thickness with any given type of fluid.

In tests which were conducted with clear and dyed saline solutions,[20] a twin photocell measuring device was used. This permitted the pickup of light intensity changes, between the clear solution to the dyed solution, when the fluid was passing over a measured distance between the photocells. The flow velocity, the thickness of the film, and the relative excursion rate were calculated. Additional measurements of the film thickness[20] were made with a contact pointer whose position was regulated with a micrometer. Although these measurements were performed on earlier experimental Centrifilmers which had physical dimensions somewhat different from those of the present model, they did establish relative values for the film thickness, which is proportional to the rate of liquid flow. At 100 ml per minute, the average film thickness of physiological saline solutions was found to be approximately 15 microns; at 600 ml per minute, approximately 75 microns. These relative values for saline solutions have been verified by absorption studies with uranyl-oxalate actinometry.[25]

Visual observations of the film velocities of various materials have been made stroboscopically with the current filmer and, recently, film thickness measurements with dyed water films were conducted on an exhibit Centrifilmer model of current dimensions which was constructed of lucite. These measurements were made with a photocell mounted outside the filmer and upon which the rays of a light source within the cup impinged after passing through the rotating film of either clear or dyed water. The output of the photocell in these experiments was then compared with the output of the same cell when the light was passed through a standard quartz cell of known depth filled with the same liquids. The graph (Figure 7) shows

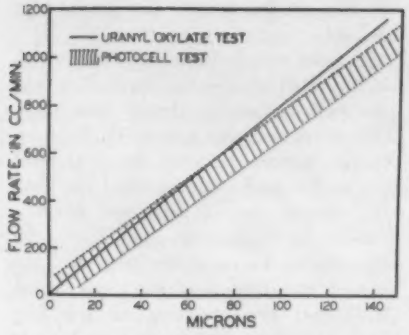


Figure 7—Graph Showing Comparison of the Average Film Thickness (at midpoint of active irradiation area) Calculated from the Results of Uranyl Oxalate Absorption and Photometric Measurements.

the film thicknesses which were obtained as a function of regulated flow rate. The results can be presented only as a scatter band since the accuracy of these measurements was relative. For instance, at a flow rate of 600 cc/min the film thickness for methylene blue dyed water may lie between 75 and 92 microns at the midsection of the bowl. Liquids of greater viscosity than dyed water (i.e., serum or plasma) will give slightly thicker films with somewhat slower film velocities upward for the same flow intake rate. For purposes of comparison, the scatter band obtained in these recent experiments is superimposed upon the graph (Figure 7) of the earlier results obtained by uranyl-oxalate absorption.[25]

The time increment required for a saline solution to travel from the bottom of the conical bowl wall to the top is one second plus or minus 0.02 to 0.03 second. The area of the inner bowl wall is 1,030 cm^2; therefore, at a flow rate of 600 ml per minute, the bowl would contain 10.0 ml of fluid at any given second. If this 10.0 ml were spread uniformly, the average film thickness would be 98 microns. It would appear then that the upper limiting value of 92 microns at 600 ml/min illustrated in Figure 7 is approaching a realistic value. The actual film thickness at 600 ml/minute in the effective ultraviolet irradiation area (the upper 28 cm of the bowl) varies progressively upwards from 120 microns to 70 microns at the bowl rim. The traverse time over this area is of the order of 0.6 seconds. The detailed formulation of these studies now in progress will be the subject of a subsequent report.[21]

The flow of thin films of fluid in the filmer bowl is laminar only in the sense that under equilibrium conditions of smooth operation the centrifugal force maintains a uniform gradation of the fluid from the bottom to the top of the bowl. Actually, the flow is characterized by a spiral turbulence which may be likened to a delimited whirlpool section of a frustrated cone.[20] This is illustrated in Figure 8, where the generalized path followed by an individual particle contained in fluid medium is indicated schematically. After striking the rotating bottom surface of the bowl, the particle (or a small portion of fluid) is accelerated rapidly outward and upward at an increasing rate. When discrete opaque particles are suspended in the test fluids, or if the surface of the film in the lower part of the bowl is disturbed, this spiraling turbulent effect can be observed directly with stroboscopic illumination. Acceleration of the fluid upward increases rapidly in the lower third of the bowl after which it becomes more uniform as indicated in Figure 8.

Changes in rotational speed of the bowl or in decreased conical angle of the cup, which are possible within slight margin without introducing major changes in design would result in thinning of the film and create higher traverse velocities. Microthin films of only a few microns can be maintained at slow flow rates.

Applications of Centrifilmer

A. Operating Setup—Accessory Equipment—A simplified schematic operational diagram, which depicts the manner in which fluid to be irradiated is delivered to the filmer and subsequently collected, is shown in Figure 9. After the initial tubing connections are made aseptically, the entire system is closed and all points where atmospheric pressure must be maintained are protected by bacteriological plug filters. The metering pump (or pumps) are Maisch* stainless steel gear pumps with special carbon surface plates. They are completely demountable for cleaning and sterilization purposes. Figure 10 is a photograph of an actual operating unit with the control panel which contains the recorders, power pack for the lamp current supply and all other accessory controls. In Figure 10 the flow meter and foam trap are located to the right front of the Centrifilmer unit; a comparison of Figure 9 and 10 will serve to identify the other operating components.

B. Plasma and Serum Sterilization—The Centrifilmer has been used extensively for the sterilization of blood serum and plasma.[13-19] In this category it should be emphasized that "sterilized" means to render completely free of contaminating bacteria and viruses, namely, all infectious agents. In general, the amount of ultraviolet energy necessary to effect such a complete kill can be applied to serum and plasma without causing denaturation or other deleterious changes in the components. This is true likewise in the sterilization of hormone solutions, i.e., ACTH. Comparative studies of the inactivation of hepatitis virus in plasma and serum by means of ultraviolet irradiation in other equipment[11,12] and with earlier models of the filmer were unsuccessful.[28] Since there is no laboratory test for this virus available at present, it is not known whether or not this agent can be rendered com-

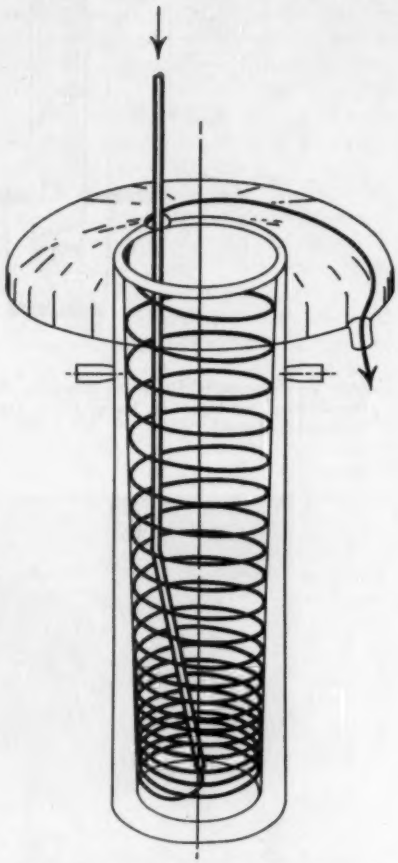


Figure 8—Diagramatic Illustration of the Spiral Characteristics of the Flowing Film. Fluid Introduced on Bottom of Bowl Is Spread by Centrifugal Force. Acceleration Upward Progressively Increases Rapidly in Lower Third of the Bowl as Fluid Friction and the Mass Inertia Are Overcome and Balanced. Under the Influence of the Continually Increasing Outward Component of the Gravitational Field, the Flow in the Upper Two-Thirds of the Bowl Is Relatively Uniform

* Maisch Metering Pumps: Mechanical Products Corporation, 168 N. Ogden Avenue, Chicago 7, Ill.

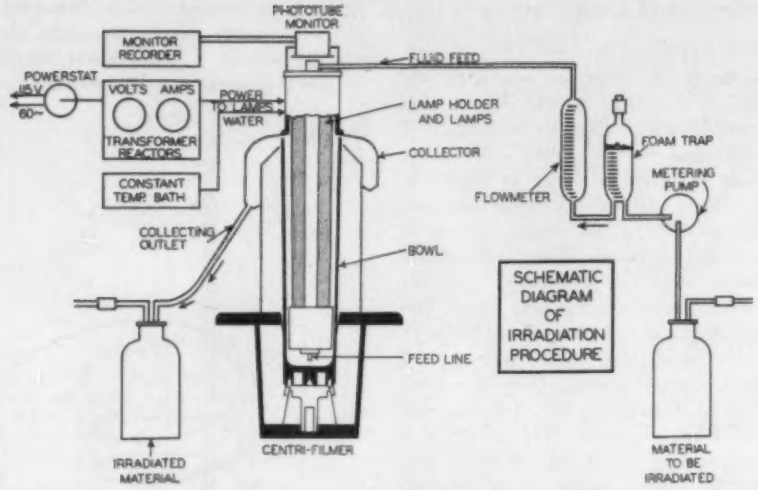


Figure 9—Schematic Diagram Showing Relation of Various Components in a Typical Irradiation Set-Up. In Large-Scale Operation the Bottles Illustrated Are Replaced by Stainless Steel Tanks

Figure 10—Centrifilmer Setup for Operation; as Indicated in Figure 9 the Bottles May Be Replaced by Tanks. The Control Panel to the Left Contains all Accessory Equipment Except the Constant Temperature Bath for the Lamp Cooling Water

pletely nonviable by means of ultraviolet irradiation alone. However, intensive studies in which the effects of irradiation were compared with other types of inactivation[22] on viruses, for which adequate testing procedures are available, have resulted in a more practical approach to the use of ultraviolet radiation in general.

C. Poliomyelitis and Influenza Vaccine Production—In a long series of studies,[2,4,23,24,29,30] during which the current Centrifilmer was evolving, it was found that, although viruses such as poliomyelitis could be killed completely with ultraviolet radiation, changes were produced in the antigenic potential. It was more practical, therefore, to utilize combinations of irradiation and chemical treatment.[3,4] With poliomyelitis, for example, it was found[3] that small increments of formalin and ultraviolet inactivation treatments were additive, possibly synergistic, and the resulting product was more highly antigenic and stable than those entailing the use of either inactivation treatment alone. More recently, in connection with the development of an "Asian" influenza vaccine, the virus was inactivated by means of irradiation in Centrifilmers. The filmer has been used also to produce vaccines for rabies,[13,14,31] foot and mouth disease, and tuberculosis.[19,32,33]

Discussion

Basically, the original objective which precipitated the development of the Centrifilmer was the need for a device in which large volumes of liquid, for instance blood serum and plasma, could be effectively "sterilized"; i. e., rendered free of contaminating viruses and bacteria. In 1942 an epidemic of serum jaundice, or hepatitis, in the United States Army was traced to pooled human serum used as a diluent in yellow fever vaccine.[34] The urgency was acute and efforts were concentrated on irradiation studies[14-19] in an attempt to establish a method (or methods) whereby plasma could be rendered safe for administration to patients.[28] On the basis of the more recent fundamental studies[2-4] with tissue culture virus suspensions, it has been possible to obtain greater insight into the degree of correlation necessary between the technological and biological factors, which must be attained in order to apply ultraviolet irradiation successfully in a practical manner.

Plasma proteins and many other media constituents are prone to denaturation or alteration[2,9] by the absorption of ultraviolet energy. The extent of denaturation is probably related to the total amount of radiant energy absorbed. However, the quantity of energy required to produce such denaturation is, in general, in excess of that required to effect the death of bacteria and viruses in the biological fluids under consideration. Furthermore, the denaturation phenomena are more closely related to length of exposure and to transient temperature elevation than to the absolute amount of energy applied. In irradiation of both viral and bacterial suspensions containing labile antigens for the production of vaccines, experience has shown that the antigenic potential of the resulting vaccine is best protected when high energy exposures over brief intervals of time are applied to extremely thin films of cold material.

Proteins and protein components of biological fluids exhibit increased denaturation and acquire toxic properties if the irradiation is carried out in the presence of oxygen, ozone or other oxidizing or reducing substances. This is prevented in the current Centrifilmer by operating in an atmosphere of flowing nitrogen and by the use of vycor lamp envelopes.

The Centrifilmer represents a precision instrument wherein physical and mechanical factors have been combined to produce as nearly as possible ideal

conditions for exposure of fluids to ultraviolet irradiation. The thickness of the film and the energy intensity to which it is exposed are controllable within reasonable limits. The microthin film is extremely important when fluids such as serum and plasma with high absorption characteristics are involved. Here the medium and its associated constituents absorb a major portion of the irradiation energy and relatively small proportions are absorbed by the pathogenic agents themselves.[2] The photon density in the very thin films must be essentially uniform and sufficient incident ultraviolet energy must be made available at the film surface to assure this and, thus, provide uniform lethal energy dosages within the film.

When one considers the minute size of virus particles and even bacteria, it can be visualized readily that such organisms in a thin film of fluid are not exposed to the irradiation in a single layer or in single file, so to speak, but rather would have many degrees of freedom within the limits of the film thickness. The spiraling upward progress of the film itself, and of particles within the film, against gravity would prolong the period during which any given increment of fluid and its contents remains within the effective irradiation field. The actual number of spiral circuits (see Figure 9) that any organism or moiety of fluid will make in transit upwards in the bowl is many times more than is indicated in the illustration. The ultimate exposure, or the net effective ultraviolet energy absorption of the total applied irradiation energy, by the organisms in question, is determined by the absorption and transmission characteristics of the suspending media,[2,3,9] as was pointed out above.

With any homogeneous fluid free of clumps or aggregates, it should be possible to establish conditions wherein ultraviolet irradiation may be successfully employed for sterilization or controlled inactivation. The removal of aggregates is an entirely separate problem[3,18,35] but it is essential that the film be entirely free of aggregates. Centrifugal separators and filtration[3] are employed in conjunction with the filmer operation to ensure this. In general, the material to be treated will dictate the choice of the method.

As the studies progressed, it became increasingly evident that the objective originally desired, complete killing of viruses and infectious agents by means of ultraviolet irradiation alone, was not and probably would not be practical in all categories. Rabies virus is an example of an extremely sensitive microorganism and complete inactivation by irradiation is feasible.[13,14,31] Extensive studies with irradiated poliovirus vaccines [3,4,24,29,30] have shown that irradiation used in combination with other (chemical) inactivating agents[22] provides not only more highly antigenic vaccines, but also more consistent and reproducible inactivation. Also, the stability of such products is generally superior to those produced by either chemical inactivation or irradiation alone. Some discussion of the rationale which is developing for this general type of combination-inactivation concept has been given in connection with the development of a formalin-ultraviolet irradiation inactivation procedure for the production of poliomyelitis vaccines.[3,35]

The intricate specifications for the irradiation equipment, the Centrifilmer, both physical and mechanical, enumerated in the foregoing paragraphs are essential for the establishment of uniform and reproducible conditions of operation. This precision instrument was designed to facilitate the absorption, under controlled conditions, of high levels of ultraviolet energy by thin-flowing films of biological liquids such as plasma, serum, or virus culture fluids. The objective was to provide a means whereby the absorption of radiant en-

ergy into a biological fluid could be accomplished so that each viable entity contained therein received a lethal, or near lethal, dose of ultraviolet radiation. Only that energy which is absorbed by the agent in question can be effective in killing or altering that agent.

One of the greatest difficulties encountered in the attempts to correlate inactivation results obtained by different groups, using different types of irradiators,[3,4,9,11,12] was the lack of a suitable method for determining the quantities of ultraviolet energy absorbed per unit volume of fluid. Dissociation of uranyl-oxalate by ultraviolet light and the quantum efficiency factor of the reaction are described in the literature by Leighton and Forbes,[36] and in more recent years, by Bowen.[37] Bowen's method and factors were used in the present studies to approximate the apparent absorption coefficient of plasma or other biological fluids. This method provides data from which one can compare the relative efficiency of different types of irradiators and different degrees of film thickness in respect to the particular electrolyte solution involved (uranyl-oxalate). A serious deficiency is that this method cannot be applied directly to biological fluids which contain protein precipitatable by the uranyl-oxalate. Plasma, tissue culture media, and extracts all contain materials, in addition to the included infectious agents, which vary in their capacity to absorb ultraviolet light.[2] There will be a distribution of the total energy absorbed between these various constituents and only a proportion of the gross energy absorption will be effective in inactivating the infectious agent. Any purely mathematical treatment of the total ultraviolet absorption, therefore, without consideration of the many factors involved (depth of film, apparent absorption coefficient, over-all composition of the suspending medium), all of which are potentially shifting variables, may be quite misleading. As has been stressed above and in earlier work,[2,3,22,23,35] the absolute criterion must remain the biological safety test, which should not be influenced by theoretical considerations, at least with the present state of our knowledge.

A number of applications are still in developmental stages and must await the results of extensive experimental and field testing. However, it may be emphasized that when sufficient data are available, such as inactivation rate curves correlated with safety and potency test data,[3,4,13-19,22,27,35,38] the potential appears very good. The virus or agent responsible for hepatitis, which actually precipitated the early serum studies, has received considerable attention recently,[6,28,39,40] and intensive studies are being directed toward the development of a laboratory test. As Stokes[39] points out, a combined method of treatment (ultraviolet plus betapropiolactone) appears feasible but this is based upon inactivation of bacteriophages, not the inactivation of hepatitis virus itself.

From a commercial standpoint, the volume capacity of the instrument described is of the order of 34 to 36 liters per hour for poliomyelitis tissue culture virus suspensions. Depending upon the sensitivity of the respective microorganisms or infectious agents to ultraviolet irradiation, this volume flow rate may be higher or lower. Since it has become increasingly evident that the successful application of ultraviolet irradiation for volume sterilization of fluids is dependent upon the thin film principle, experiments are now in progress to determine the feasibility of certain modifications of the present equipment. Simple calculation indicates that a filmer with a bowl twice the diameter and length of the present one would have approximately four times the volume capacity.

Summary

The development of an efficient precision instrument for the practical large-scale irradiation of biological fluids (serum, plasma, tissue culture fluids, tissue extracts, and bacterial suspensions) is described in some detail. One major requisite is a uniform and controllable microthin film of fluid. The instrument described is capable of producing such continuously flowing films in a completely closed, aseptic system. Films only a few microns thick can be maintained even with highly viscous fluids (egg albumin), and variable thicknesses to the order of 100 mμ are obtainable, depending upon the flow rate. The other primary requisite, an internally situated ultraviolet energy source, provides a stable, but variable, incident ultraviolet energy field for application to the filmed fluid. This incident energy penetrates the fluid film and provides an essentially uniform photon density throughout the fluid as it passes through the effective radiation area. The absorption of the ultraviolet energy within the fluid film and its constituents is discussed and the various factors to be considered in the evaluation of the specific and the indirect effects of the absorbed energy upon the agent in question are pointed out. The correlation between the technological and biological (infectivity, safety, and potency testing) factors which must be attained to control and utilize the instrument for the production of vaccines and bacteriologically sterile fluids are pointed out and discussed.

REFERENCES

1. Lea, D. E. Actions of Radiations on Living Cells. Cambridge, Mass.: Harvard University Press, 1955.
2. Taylor, A. R.; Kay, W. W.; McLean, I. W., Jr.; Oppenheimer, F.; and Stimpert, F. D. Effect of Ultraviolet Light on Poliomyelitis Virus. J. Immunol. 78:45, 1957.
3. Taylor, A. R.; Kay, W. W.; Timm, E. A.; Hook, A. E.; and McLean, I. W., Jr. Inactivation of Poliomyelitis Virus for the Preparation of Vaccines. I. Formalin and Ultraviolet Irradiation. Ibid. 79: 265, 1957.
4. Shaughnessy, H. J.; Wolf, A. M.; Janota, M.; Neal, J.; Oppenheimer, F.; Milzer, A.; Naftulin, H.; and Morrissey, R. A. Immunogenicity of Poliomyelitis Vaccine Prepared with Ultraviolet Irradiation and Mild Heat. Proc. Soc. Exper. Biol. & Med. 95:251, 1957.
5. Timm, E. A.; McLean, I. W., Jr.; Kupsky, C. H.; and Hook, A. E. The Nature of the Formalin Inactivation of Poliomyelitis Virus. J. Immunol. 77: 444, 1956.
6. Hartman, F. W., and LoGrippo, G. A. Combined Beta-Propiolactone and Ultraviolet Irradiation for Plasma Sterilization. Henry Ford Hospital International Symposium, "Hepatitis Frontiers." Boston, Mass.: Little, Brown, 1957, pp. 407–416.
7. Timm, E. A.; McLean, I. W., Jr.; and Taylor, A. R. Unpublished data.
8. Oliphant, J. W., and Hollaender, A. Homologous Serum Jaundice, Experimental Inactivation of Etiologic Agent in Serum by Ultraviolet Irradiation. Pub. Health Rep. 61:598, 1946.
9. Taylor, A. R.; Sharpe, D. G.; Beard, D.; Finkelstein, H.; and Beard, J. W. Influence of Ultraviolet Light on Equine Encephalomyelitis Virus Protein (Eastern Strain). J. Infect. Dis. 69:224, 1941.
10. Fogh, J. Ultraviolet Light Inactivation of Poliomyelitis Virus. Proc. Soc. Exper. Biol. & Med. 89:464, 1955.
11. Habel, K., and Sockrider, B. T. A Continuous Flow Method of Exposing Antigens to Ultraviolet Radiation. J. Immunol. 56:273, 1947.
12. Boseman, V.; Tripp, J. T.; and Beary, B. A Modified Habel-Sockrider Ultraviolet Irradiation Apparatus for Use in Serum and Vaccine Production. Ibid. 64:65, 1950.
13. Levinson, S. O.; Milzer, A.; Shaughnessy, H. J.; Neal, J. L.; and Oppenheimer, F. A New Method for the Production of Potent Inactivated Vaccines with Ultraviolet Irradiation. XI. Sterilization of Bacteria and Immunization with Rabies and St. Louis Encephalitis Vaccine. Ibid. 50:317, 1945.
14. ————. Production of Potent Inactivated Vaccines with Ultraviolet Irradiation: Abbreviated Preliminary Report on Sterilization of Bacteria and Immunization with Rabies and St. Louis Encephalitis Vaccines. J.A.M.A. 125:531, 1944.
15. Milzer, A.; Oppenheimer, F.; and Levinson, S. O. Production of Potent Inactivated Vaccines with Ultraviolet Irradiation. III. An Abbreviated Preliminary Report on a Completely Inactivated Poliomyelitis Vaccine (Lansing Strain Virus) in Mice. Ibid. 125:704, 1944.
16. ————. A New Method for the Production of Potent Inactivated Vaccines with Ultraviolet Irradiation. III. A Completely Inactivated Poliomyelitis Vaccine with the Lansing Strain in Mice. J. Immunol. 50:331, 1945.
17. Shaughnessy, H. J.; Milzer, A.; Neal, J. L.; and Levinson, S. O. Production of Potent Inactivated Vaccines with Ultraviolet Irradiation. IV. Vaccination Against Bacillary Dysentery. J. Infect. Dis. 78:69, 1946.
18. Milzer, A., and Levinson, S. O. Active Immunization of Mice with Ultraviolet Inactivated Lymphocytic Choriomeningitis Virus Vaccine and Results of Immune Serum Therapy. Ibid. 85:251, 1949.
19. Milzer, A.; Levinson, S. O.; and Lewis, M. B. Immunization of Mice with Ultraviolet Killed Tuberculosis Vaccines. Proc. Soc. Exper. Biol. & Med. 75:733, 1950.
20. Benesi, E. Design of a Centrifugal Filmer for the Ultraviolet Irradiation of Liquids. General Motors Eng. J. 3:2, 1956.
21. Kay, W. W.; Taylor, A. R.; and Brandon, F. B. To be published.
22. Schultz, P.; Rightsel, W. A.; Timm, E. A.; Taylor, A. R.; and McLean, I. W., Jr. Partially Inactivated

Poliomyelitis Virus: Initiation of Infection in Tissue Culture. J. Immunol. 79:497, 1957.

23. Milzer, A.; Levinson, S. O.; Shaughnessy, H. J.; Janota, M.; Vanderboom, K.; and Oppenheimer, F. Immunogenicity Studies in Human Subjects of Trivalent Tissue Culture Poliomyelitis Vaccine Inactivated by Ultraviolet Irradiation. A.J.P.H. 44:26, 1954.
24. Wolf, A. M.; Shaughnessy, H. J.; Church, R. E.; Milzer, A.; Janota, M.; Oppenheimer, F.; Morrisey, R. A.; Naftulin, H.; Chapman, J. W.; and Levinson, S. O. Immunogenicity, in Children, of Ultraviolet-Treated Poliomyelitis Vaccine. J.A.M.A. 161:775, 1956.
25. Oppenheimer, F.; Wolf, A. M.; Veldee, M. V.; and Wagman, J. Unpublished data.
26. Koller, L. R. Ultraviolet Radiation. New York, N. Y.: Wiley, 1952, p. 246.
27. Beardmore, W. B.; Hook, A. E.; Sarber, R. W.; McLean, I. W., Jr.; and Taylor, A. R. Poliomyelitis Vaccine Safety Testing by the Tissue Culture Method. J. Immunol. 79:439, 1957.
28. Murray, R.; Oliphant, J. W.; Tripp, J. T.; Hampil, B.; Ratner, F.; Diefenbach, W. C. L.; and Geller, H. Affect of Ultraviolet Radiation on the Infectivity of Icterogenic Plasma. J.A.M.A. 157:8, 1955.
29. Shaughnessy, H. J.; Wolf, A M.; Janota, M.; Neal, J.; Oppenheimer, F.; Milzer, A.; Naftulin, H.; and Morrissey, R. A. Immunogenicity of Poliomyelitis Vaccine Prepared with Ultraviolet Irradiation and Mild Heat. Proc. Soc. Exper. Biol. & Med. 95:251, 1957.
30. Molner, J. G.; Anderson, C. P.; Carnes, H. E.; Timm, E. A.; and Taylor, A. R. A Study of the Serologic Response to Ultraviolet-Formalin Inactivated Poliomyelitis Vaccine. A.J.P.H. 48:590, 1958.
31. Kay, W. W.; Oppenheimer, F.; and Taylor, A. R. Unpublished data.
32. Sarber, R. W.; Nungester, W. J.; and Stimpert, F. D. Immunization Studies with Irradiated Tuberculosis Vaccines. Am. Rev. Tuberc. 62:418, 1950.
33. Pareja Coronel, A. Trials with Tuberculosis Vaccine, Irradiated. Ibid. 75:987, 1957.
34. Oliphant, J. W. Jaundice Following Administration of Human Serum? Harvey Lecture Series 39:254, 1943–1944.
35. McLean, I. W., Jr., and Taylor, A. R. Experiences in the Production of Poliovirus Vaccines. Progr. M. Virol. 1:122, 1958.
36. Leighton, W. G., and Forbes, G. S. Precision Actinometry with Uranyl Oxalate. J. Am. Chem. Soc. 52:3139, 1930.
37. Bowen, E. J. The Chemical Aspects of Light (2nd ed.). London, England: Oxford University Press, 1946, p. 282.
38. Timm, E. A.; Rope, E. Z.; and McLean, I. W., Jr. Chick Potency Tests of Poliomyelitis Vaccine: Basic Studies on Response. J. Immunol. 80:407, 1958.
39. Stokes, J., Jr. Ultraviolet Radiation. Henry Ford Hospital International Symposium, "Hepatitis Frontiers." Boston, Mass.: Little, Brown, 1957.
40. McLean, I. W., Jr. Tissue Culture in the Isolation of the Hepatitis Virus. Henry Ford Hospital International Symposium, "Hepatitis Frontiers." Boston, Mass.: Little, Brown, 1957.

Dr. Oppenheimer is director of research, Michael Reese Research Foundation, Chicago, Ill. Mr. Benesi is a senior research engineer, General Motors Research Staff, Detroit, Mich. Dr. Taylor is laboratory director in virus research, Research Department, Parke, Davis and Company, Detroit, Mich.

Antibiotic Treated Fish Approved

The Food and Drug Administration has approved the use of chlorotetracycline on fresh-caught fish in sound condition. Under the new ruling the antibiotic may be used on fresh-caught whole, headed, and gutted fish, shucked scallops, and unpeeled shrimp. It is not permitted on processed seafood products such as fish cuts, steaks, fillets, peeled shrimp, and shucked oysters.

Chlorotetracycline has been used since 1955 on uncooked poultry. Although minute amounts of the antibiotic may remain even after cooking, extensive study has shown that the residue can be consumed without harm even to the few exceptional persons who have developed a sensitivity to antibiotics. A limit of five parts per million has been set as the maximum amount that may legally remain on fresh-caught unprocessed seafood. Use of the antibiotic in no way eliminates the need for adequate refrigeration nor maintenance of thoroughly sanitary conditions aboard the boats.

Why are we concerned today about the control of venereal disease? This report of an outbreak of gonorrhea in 1957 reveals some of the factors that hinder the eradication and final conquest of such conditions. Again it is shown that the problem is not just biological; it is even more significantly a social question.

AN OUTBREAK OF GONORRHEA IN MASSACHUSETTS—1957

Nicholas J. Fiumara, M.D., M.P.H., F.A.P.H.A.; Barnard P. Todd, M.D.; Hazel D. Young, R.N.; and Janet G. Wilson, R.N.

IN A PREVIOUS publication an outbreak of gonorrhea and early syphilis in Massachusetts involving a minimum of 48 persons was described.[1] The present account concerns itself with at least 26 persons who were exposed to or infected with gonorrhea only.

Gonorrhea is a disease which is relatively easy to diagnose in the male and more difficult to establish in the female. Yet the disease responds quickly to penicillin. So quickly effective is penicillin that patients cease to be infectious within an hour or two after an intramuscular injection of this antibiotic. In 24 hours most of the male patients are "dry." Because of the mildness of the disease and the rapidity of cure, the patients lose their respect for this disease. Consequently, many reexpose themselves—oftentimes with the same female partner—and return in a day or two with another infection; again penicillin is effective. This type of repeated reinfection following exposure after treatment has been called "ping pong" gonorrhea. Only when the female partner is brought in and treated can this situation be handled effectively. Furthermore, the management of a patient with gonorrhea has been complicated by the increasing problem of self-treatment due to over-the-counter dispensing of penicillin tablets.

The short incubation period of this disease, three to five days, permitted a more explosive onset when the infection was introduced into this promiscuous group. It is of more than passing interest to know that the city in which this epidemic occurred has been for years considered a low-prevalence area for both gonorrhea and syphilis. It is a quiet city where most of the local entertainment is centered around the home and friends. This city is located in the northeastern section of Massachusetts, approximately 18 miles from Boston, 238 miles from New York City, and 90 miles from Portland, Me.[2] It has a population of 23,000 with a median age of 32.5 years, compared with one of 32.8 for the state, and a density of 1,377 per square mile. Manufacturing is the predominant pursuit; 82 per cent of the workers are in the leather industry and 10 per cent in plants making chemicals and allied products. Approximately 99.9 per cent of the inhabitants are white, 81 per cent native born, and 0.1 per cent

are Negroes. The median number of school years completed is 10.1, compared with 10.9 years for the state.

This, then, is the community in which the outbreak of gonorrhea occurred. The events of the outbreak are presented in sequence with a word picture of the patients and their contacts. They have been assigned names arbitrarily selected from the dictionary as they appear on the scene.

1. The first case which came to our attention was that of Adolph (Table 1). He was brought to the clinic by a former patient who had had gonorrhea twice and was therefore considered by his friends to be an authority on the disease. Despite this, he too appears later on. This referral by a clinic patient sustains the experience of physicians that a well treated and satisfied patient is the best source of later referrals. Adolph was 26 years old. His wife had left him prior to the present escapade. There were no children. His wife was known to us prior to the marriage as a contact of a patient with gonorrhea, not her present husband.

Adolph was tall, thin, undernourished, and pasty-looking. He wore loud clothes and flashy shirts. A penciled mustache adorned his upper lip. Never a steady worker, he was unemployed at the time of examination. What little work he had done was unskilled; he had been a gas station attendant, delivery truck driver, and so on. His family and siblings were respectable members of the community. Adolph had recently been arrested for stealing two cases of liquor and was out on bail. His past arrests were for drunkenness, fights, and driving under the influence of liquor. He lived and slept with his friends, spending all his evenings at the "club," actually a tavern, drinking and fraternizing.

When Adolph was admitted to the clinic he had a profuse urethral discharge. The smear and culture were positive for gonorrhea. Repeated Hinton tests were negative. He was treated with penicillin on February 14, 1957. The infection cleared up, but there were two subsequent reinfections, confirmed by positive cultures, the first on March 15 and the second on March 25, 1957, both successfully treated with penicillin.

With all his leisure Adolph admitted only six contacts, as follows:

(1a) Angela was a 30-year-old divorcee. Adolph had had sexual exposure with her intermittently for many years, but only when no one else was available. She admitted intimacies with him during the week of February 10, but none for the previous month.

Angela had four children who were in the care of her husband. She had an ageless, childlike face with sandy hair worn in two long braided pigtails; her childish appearance was accentuated by her extremely short stature, thin body,

Table 1—Patients and Contacts in Narrative Sequence

1. Adolph
   a. Angela
   b. Belle
   c. Edith
   d. Dora
   e. Cynthia
   f. Gloria
2. Angela (1a)
   a. Adolph (1)
   b. Ben
   c. Clifford
3. Belle (1b)
   a. Adolph (1)
   b. Clifford (2c)
   c. Dave
   d. Fred
   e. Johnny
   f. Glenn
   g. Harry
   h. Jack
   i. Larry
   j. Mike
   k. Pete
4. Edith (1c)
   a. Ben (2b)
   b. Adolph (1)
   c. Clifford (2c)
   d. Oscar
5. Dora (1d)
   a. Adolph (1)
   b. Ben (2b)
   c. Harry (3g)
6. Cynthia (1e)
   a. Adolph (1)
   b. Ben (2b)
   c. Dave (3c)
   d. Steve
   e. Pat
   f. Rufus
7. Gloria (1f)
   a. Adolph (1)
   b. Pat (6e)
8. Johnny (3e)
   a. Belle (1b)
   b. Jezebel
   c. Kate
9. Glenn (3f)
   a. Belle (1b)
   b. Lola

Table 2—Patients and Their Contacts in an Epidemic of Gonorrhea in Massachusetts—February Through April, 1957

Name of Patient	Age	MS*	Yrs. of School	Date of Treatment	Names of Contacts	Age	MS	Yrs. of School	Date of Exposure	Onset of Symptoms	Diagnosis	Date of Treatment
Adolph	26	Sep	9	2/14	Angela	30	Div	6	2/10		Infected	2/27
				3/15	Belle	18	Sin	10	Late Feb. or Early Mar.		"	3/8, & 4/24
				3/25	Edith	30	Mar	9	Wk. of 2/17		"	3/6
					Dora	37	Sin	6	Wk. of 2/17		"	3/13, ⓜ clinic, Self-Rx prior
					Cynthia	32	Div	10	3/23		"	3/25
					Gloria	24	Sin	7	2/23		"	3/8
Angela	30	Div	6	2/27	Adolph	26	Sep	9	2/10	2/12, 3/14, 3/24	"	2/14, 3/15, 3/25
					Ben	36	Sep	10	Wk. of 2/17	2/23, 3/25	"	2/23, 3/25
					Clifford	23	Sin	11	3/2	3/3	"	3/6
Belle	18	Sin	10	3/8	Adolph	26	Sep	9	Late Feb. or Early Mar.	2/12, 3/14, 3/24	"	2/14, 3/15, 3/25
				4/24	Clifford	23	Sin	11	3/2	3/3	"	3/6
					Dave	26	Sin	8	2/27	3/25	"	?Rx in Detroit, 3/25
					Fred	32	Sin	8	Wk. of 3/4	3/7	"	Self-Rx found 3/15
					Johnny	26	Mar	8	3/5	3/12	"	3/13
					Glenn	26	Sin	8	3/7		"	3/11
					Harry	25	Div	10	2/27	3/14	"	Rx in Detroit, LMD 3/15
					Jack	35	Mar	12	Late Feb.		Not Infected	
					Larry	37	Mar	12	3/2		"	
					Mike	25	Sin	8	4/12	3/14	Infected	4/15
					Pete	25	Sep	10	4/1		Not Infected	
Edith	30	Mar	9	3/6	Ben	36	Sep	10	2/27	2/23, 3/25	Infected	2/23, 3/25
					Adolph	26	Sep	9	Wk. of 2/17	2/12, 3/14, 3/24	"	2/14, 3/15, 3/25
					Clifford	23	Sin	11	3/2	3/3	"	3/6
					Oscar	45	Mar	6	2/26		"	3/8
Dora	37	Sin	6	3/13 ⓜ Clinic Self-Rx prior	Adolph	26	Sep	9	Wk. of 2/17	2/12, 3/14, 3/24	"	2/14, 3/15, 3/25
					Ben	36	Sep	10	Wk. of 2/20	2/23, 3/25	"	2/23, 3/25
					Harry	25	Div	10	3/10	3/14	"	3/15 by LMD
Cynthia	32	Div	10	3/25	Adolph	26	Sep	9	3/23	2/12, 3/14, 3/24	"	2/14, 3/15, 3/25
					Ben	36	Sep	10	3/24	2/23, 3/25	"	2/23, 3/25
					Dave	26	Sin	8	3/24	3/25	"	3/25, ? Rx in Detroit
					Steve	24	Sin	10	3/24	3/25	"	3/25
					Pat	34	Sep	7	3/10	3/11	"	Self-Rx
					Rufus	26	Sin	9	3/10		Not Infected	

Table 2—Patients and Their Contacts in an Epidemic of Gonorrhea in Massachusetts—February Through April, 1957—Continued

Name of Patient	Age	MS*	Yrs. of School	Date of Treatment	Names of Contacts	Age	MS	Yrs. of School	Date of Exposure	Onset of Symptoms	Diagnosis	Date of Treatment
Gloria	24	Sin	7	3/8	Adolph	26	Sep	9	2/23	2/12, 3/14, 3/24	Infected	2/14, 3/15, 3/25
					Pat	34	Sep	7	3/6	3/11	"	Self-Rx
Ben	36	Sep	10	2/23	Angela	30	Div	6	Wk. of 2/17		"	2/27
				3/25	Edith	30	Mar	9	2/27		"	3/6
					Dora	37	Sin	6	Wk. of 2/20		"	3/13 @ clinic, Self-Rx prior
					Cynthia	32	Div	10	3/24		"	3/25
Clifford	23	Sin	11	3/6	Angela	30	Div	6	3/2		"	2/27
					Belle	18	Sin	10	3/2		"	3/8, 4/24
					Edith	30	Mar	9	3/2		"	3/6
Dave	26	Sin	8	Rx in Detroit	Belle	18	Sin	10	2/27		"	3/8, 4/24
				3/25	Cynthia	32	Div	10	3/14		"	3/25
Fred	32	Sin	8	Self-Rx	Belle	18	Sin	10	Wk. of Mar. 4		"	3/8, 4/24
Johnny	26	Mar	8	3/13	Belle	18	Sin	10	3/5		"	3/8, 4/24
					Jezebel	20	Sep	10	3/6		"	3/17
					Kate	19	Mar	8	3/7		"	3/13
Glenn	26	Sin	8	3/11	Belle	18	Sin	10	3/7		"	3/8, 4/24
					Lola	28	Sin	12	3/1		"	3/12
Harry	25	Div	10	Rx in Detroit	Belle	18	Sin	10	2/27		"	3/8, 4/24
				3/15, by LMD	Dora	37	Sin	6	3/10		"	3/13 @ clinic, self-Rx prior
Mike	25	Sin	8	4/15	Belle	18	Sin	10	4/12		"	3/8, 4/24
Oscar	45	Mar	6	3/8	Edith	30	Mar	9	2/26		"	3/6
Steve	24	Sin	10	3/25	Cynthia	32	Div	10	3/24		"	3/25
Pat	34	Sep	7	Self-Rx	Cynthia	32	Div	10	3/10		"	3/25
					Gloria	24	Sin	7	3/6		"	3/8
Jezebel	20	Sep	10	3/17	Johnny	26	Mar	8	3/6	3/12	"	3/13
					Warren	28	Sep	10	3/8		Not Infected	
Lola	28	Sin	12	3/12	Glenn	26	Sin	8	3/1		Infected	3/11
Kate	19	Mar	8	3/13	Johnny	26	Mar	8	3/7	3/12	"	3/13

* Marital status: Sin = single; Sep = separated; Mar = married; Div = divorced.

and flat chest. Her appearance was that of a preadolescent girl.

Her family were a hard-bitten lot with police records. Her four sisters and three brothers had had venereal disease or were named as contacts of infected patients. In spite of this background the family did not want her around because she had stolen from them. Angela had been in the reformatory, principally for petty thievery. She was treated at the clinic in 1947 for gonorrhea. Angela was promiscuous. She craved attention and recognition. She was neat when sober, unkempt when drunk. She fought "like an alley cat" when only girls were present at the club—and for no apparent cause—but was smiling and angelic when the boys were in. She was willing to have an exposure with any male who gave her any attention. Even the salesmen who came to her door were invited in if they "looked nice." She kept house for a 65-year-old man in exchange for her board and room.

Angela had a negative smear and positive culture for gonococci and was treated on February 27, 1957. In addition to Adolph she named two other contacts.

(1b) Belle was an 18-year-old statuesque blond who was single. Her parents were divorced because of the father's alcoholism. She and her older sister were brought up by the maternal grandmother and both were put in the Industrial School for Girls, the sister for being a stubborn child and Belle as a runaway. Throughout her early teens Belle was sexually promiscuous. She, in our opinion, was the most promiscuous one of the group. She was the most sought after, the most dated, to the point that she had to have a telephone with an unlisted number installed.

Belle was treated by a private physician in a neighboring hospital about Christmastime. The reports were consistent with a pelvic inflammatory disease. She was treated with penicillin. No laboratory studies were made. During this outbreak she had two attacks of gonorrhea, proved by smears and cultures, one on March 8, and the second on April 24. Her exposure with Adolph occurred during late February or early March. In addition to Adolph she named nine other contacts.

(1c) Edith was a 30-year-old married woman living with her 45-year-old husband and one child. She was a quiet, neat, petite girl. She was entertaining in a quiet way. Each morning she left for the club after bringing her child across town to her mother who was a rigid but helpless individual. Edith was promiscuous even before her marriage. She was pregnant when she married her husband, Oscar.

Edith stayed at the club all day, helping out at the bar when things got busy and spending the night with whomever met her fancy. When she came home after being out all night and her husband asked where she had been, he got no answer or was told it was none of his business. They are still living together.

On examination, Edith had a positive culture and was treated on March 6, 1957. Repeated blood Hinton tests were negative. Edith admitted exposures with Adolph during the week of February 17. The sexual intimacies took place in a car. In addition to Adolph, she named three other contacts.

(1d) Dora was a 37-year-old, unattractive single woman. She was big and stout and was working as housekeeper to an older man not a member of the present group. Dora had had three illegitimate children by three different men and these children were under the care of the State Welfare Department. Not much was known of her parents, but she had a married sister who was known to be promiscuous prior to her marriage. Dora's promiscuity was limited by her unattractiveness. She was visibly pleased with any attention by men and was more than agreeable to any

suggestion for a sexual exposure. When she was examined at clinic smears and cultures for gonococci were negative, but she admitted purchasing penicillin tablets at the local drugstore when she heard of the gonorrheal infections in the group. Epidemiologically Dora was considered to be infected. Her exposure with Adolph occurred also during the week of February 17. She was given an injection of penicillin on March 13. In addition to Adolph, Dora named two other contacts.

(1e) Cynthia was a 32-year-old, pretty, petite, redhaired divorcee whose husband divorced her because of her heavy drinking. She came from a prominent family and married a man whose family was socially and politically prominent. They had one child who was in the custody of the father. During her married life she and her husband held numerous parties in accordance with their social position. Prior to her mariage she never drank, but at these parties she drank with her husband and could not stop. When sobering up she became extremely remorseful, but continued to drink to deaden the pain of anguish. She had few girl friends. Cynthia had been going steady with Adolph for about two weeks and had exposure with him on March 23. Her smears and cultures were positive and she was treated on March 25. In addition to Adolph, Cynthia named five other contacts.

(1f) Gloria was a 24-year-old, single girl with reddish-brown hair, beautiful skin, and a deceptively angelic face. When she first appeared at the clinic it was thought that we had the wrong contact since she had none of the features characteristic of the group. Innocent of eye and face as she appeared, she was brought to the clinic by her mother ten years previously at the age of 14 to be examined for a venereal disease. Gloria had had repeated sexual exposures. Four years previously she had an illegitimate pregnancy and the child was under the care of the State Welfare Department. In the spring of 1956 she had a dilatation and curettage because of a miscarriage. Her father was an alcoholic. Her mother was a pleasant, easy-going individual. Gloria was a periodic drinker and admitted that when she was drinking she could not say "No." All her exposures took place while she was drinking. She admitted exposure with Adolph on February 23. The smears and cultures were positive and she was treated on March 8. In addition to Adolph, she admitted exposures with one other person.

2. Angela was the 30-year-old, baby-faced woman described above (1a) who was treated for gonorrhea on February 27. When interviewed she named the following contacts.

(2a) Adolph. Exposure with him occurred during the week of February 10. He was the 26-year-old-patient who was the first individual examined in this outbreak. Adolph was found to be infected and was treated on February 14. He has had two subsequent reinfections and was treated for them on March 15 and March 25.

(2b) Ben, a 36-year-old man separated from his wife, who had custody of their one child. He was tall and thin, with a kind and fatherly expression on his not too handsome face. All the "gang" went to him with their troubles. When they were broke, he helped them along with money. He went to the "club" on week ends as a rule and then bought drinks for his friends. His work record was marred by binges every three or four months. Compared to his cronies, his standards of conduct were high; formerly a churchgoer, he had dropped this activity. Ben in his role of patriarch brought Adolph, the original patient, to the clinic and was helpful in identifying others, as well as straightening out the recalcitrant patients. Ben had gonorrhea twice, once in 1946 and again in 1948. There were further attacks on February

23, 1957, with symptoms beginning that morning, and on March 25, again with symptoms beginning the same day. Both infections were confirmed by positive cultures. Repeated Hinton tests were negative.

When interviewed, Ben said he had exposures with Angela during the week of February 17, and apologetically added he was "feeling high." In addition to her, he named two other contacts.

(2c) Clifford was a 23-year-old single man who worked on road construction but usually was unemployed in the winter. He knew the gang but was not a member of it and did not want to be. He had few friends and did not drink as much as the rest of the group. At the clinic he was very cooperative and answered all questions with seeming truthfulness, but never volunteered anything. He was quite concerned about the health of his girl friends and was instrumental in getting them to the clinic. He admitted exposures with Angela during the afternoon of March 2, 1957. That night he also had exposures with Edith. The next day he had a urethral discharge which was positive by smear and culture. He was treated successfully on March 6. Clifford named two other contacts.

3. Belle was the 18-year-old blond mentioned previously (1b). During this outbreak she had two attacks of gonorrhea on March 8, and April 24, proved by smears and cultures. Belle named 11 contacts.

(3a) Adolph was exposed during late February or early March. He was found to be infected and was treated on February 14. He had two subsequent reinfections and was treated on March 15 and March 25.

(3b) Clifford had an exposure on March 2. Symptoms began the next day and he was treated on March 6.

(3c) Dave was Ben's 26-year-old younger, single brother. When working Dave was a long-haul truck driver operating between Boston and Detroit. When unemployed he drank and lived with his father and older brother. He frequented the club. Dave denied prior attacks of gonorrhea, although he spoke authoritatively on the subject, and was well versed on the name and location of VD clinics from Boston to Detroit. A check of the national directory of clinics corroborated the accuracy of his statements.[3]

Dave admitted an exposure with Belle on February 27 at her home. Onset of symptoms was on March 25. He had a positive smear and culture on that date and was treated for gonorrhea. Interestingly enough, the day after his exposure he went on one of his trips to Detroit; it was hinted by one of his friends that Dave was treated in the Detroit VD clinic for gonorrhea.

(3d) Fred was a clean-cut, lean, 32-year-old, single male. He was interesting in that he was a steady worker, did not drink very much, was well spoken and obviously did not belong to the gang. The lure was Belle. Belle admitted an exposure with Fred during the week of March 4 at her apartment. However, Fred could not be found until the week of March 15, during which time he had taken penicillin orally. How much he took and where he purchased it he would not reveal. Needless to say, when he was examined he was symptom-free; urinary sediment smears and cultures were negative. The blood Hinton test was negative for Fred as with all the other persons concerned in this outbreak.

(3e) Johnny was a 26-year-old married man who just could not keep out of trouble in spite of his best intentions. He was tall and easy-going. Johnny did not like to work so his wife worked. Johnny stayed home, stretched out on the couch, the bottle by his side, sipping all day long. He took good care of the new baby, too—his first—she slept most of the time. The wife was content with this arrangement. However, when she was in the hospital delivering her baby

Johnny had an exposure with Belle on Tuesday, March 5, with Jezebel on Wednesday, and with his wife on Thursday, following her discharge from the hospital. What was the wife's reaction to this? Why, these extramarital activities would not have occurred if she had been home to take care of his needs.

Johnny's urethral discharge began on March 12. He was diagnosed and treated on March 13.

(3f) Glenn was a big husky 26-year-old single school friend of Adolph. He worked steadily as an attendant in a mental hospital. He was the only child of divorced parents and his mother had remarried. He had had an exposure with Belle on March 7. His previous exposure was with Lola on March 1. In spite of taking oral penicillin Glenn had positive smears and cultures. He responded to our injection of penicillin on March 11.

(3g) Harry was a 25-year-old, tense, nervous individual who was divorced. He was Belle's steady boy friend, but he married someone else. He had an exposure with Belle on February 27. The next day he took off for Detroit with Dave, who also had had intimacies with Belle the day before. Both Harry and Dave were most likely treated in Detroit. Harry on his return had a chronic prostatitis, which was negative by smear and culture for gonococci, but which interestingly enough responded to 600,000 units of penicillin. He "had had it." Harry denied any other contacts.

(3h and 3i) Jack and his brother Larry came from Boston and met Belle. Each had an exposure with her, Jack during the latter part of February and Larry on March 2. Both were found to be not infected.

(3j) Mike was a 25-year-old truck driver. He succeeded Harry as Belle's steady boy friend. They would have been married, too, but Belle discovered him dating a divorcee. They broke up. Belle had an exposure with Mike on April 12. He was treated by his family physician with penicillin on April 15. The physician did not interview the patient for contacts nor would he grant permission for our nurse to do so.

(3k) Pete was a 25-year-old truck driver who without question was the Adonis of the group. An only child, he was pampered and spoiled. He had been married and separated; there were no children. Preoccupied with his drinking and women, he gave up work entirely and was supported by his friends of both sexes. Belle had an exposure with him during the week of April 1. He was not infected.

4. Edith (1c) was the 30-year-old married woman living with her 45 year-old husband and one child. She had positive smears and cultures and was treated on March 6. She named the following contacts.

(4a) Ben. Exposure occurred on February 27. He was found to be infected, was treated on February 23, and was subsequently reinfected and treated on March 25.

(4b) Adolph had exposures with Edith during the week of February 17. He was found to be infected and was treated on February 14. He had two subsequent reinfections and was treated on March 15 and March 25.

(4c) Clifford had an exposure which took place in a car on March 2. The discharge began the next morning and it was positive by smear and culture. Clifford was treated on March 6.

(4d) Oscar was Edith's 45-year-old husband. He was a short, thin, edentulous man, not at all good-looking, with a weak and a tired and defeated expression. He worked as a dishwasher, but had trouble maintaining even this job. He did not go to the club at all, and when his wife was there he could frequently be found sitting at home with a bottle. He knew of his wife's premarital and extramarital promiscuity, but there was nothing he could do about it—kick-

ing her out would make his lot in life no better. Oscar had marital relations on February 26. He denied any urethral discharge, but the urinary sediment culture was positive for gonococci and he was treated on March 8. Oscar denied any exposures other than with his wife.

5. Dora (1d) was the 37-year-old, big, stout, single woman who when hearing of the gonococcal infection among her friends went to the local drug store and purchased penicillin tablets. Although her smears and cultures were negative, she was given an injection of penicillin on February 13. She named three contacts.

(5a) Adolph. Exposure occurred during the week of February 17. Adolph was found to be infected and was treated on February 14. He had two subsequent reinfections and was treated on March 15 and March 25.

(5b) Ben. Exposures took place the week of February 20. He was treated for gonorrhea on February 23, had a subsequent reinfection, and was treated on March 25.

(5c) Harry. Exposure occurred on March 10. He was treated by his private physician for gonorrhea on March 15.

6. Cynthia (1e) was the 32-year-old divorcee who came from a socially prominent family. Her smears and cultures were positive and she was treated on March 25. When interviewed Cynthia named six contacts.

(6a) Adolph. Exposure took place on March 23. Adolph was found to be infected and was treated for gonorrhea on February 14. He had two subsequent reinfections and was treated on March 15 and March 25.

(6b) Ben. Exposure took place on March 24. He was treated for gonorrhea on February 23. He had one subsequent reinfection and was treated on March 25.

(6c) Dave. Exposure took place on March 14. Symptoms began on March 25 and he was treated March 25 for gonorrhea.

(6d) Steve was a 24-year-old, single man who went to school with many of the patients involved in this outbreak. He was an athletic and alert individual who worked steadily in an electronics company. He did not drink to excess and occasionally visited his school friends at the cafe during a week end. He would drive many of them to and from clinic. His exposure with Cynthia occurred on March 24. Interestingly enough, Ben and Dave spent the week end with Cynthia and Steve went to visit them. This is how he had an opportunity for exposure with Cynthia. Steve had a positive culture for gonorrhea when examined at the clinic, although his smear was negative. He was treated on March 25.

(6e) Pat was a 34-year-old construction worker who was separated from his wife. He was the toughest member of the group, domineering, quick to take offense, and equally quick to fight. He was a hard drinker. His wife had left him because of his disposition. At the clinic he was very cooperative and recited many of the anecdotes about his friends which helped considerably when they were subsequently interviewed for contacts. His exposure with Cynthia was on March 10. Following this he had purchased penicillin at a drugstore and his symptoms subsided with self-medication. When he was seen at the clinic on April 5 the smears and cultures were negative.

(6f) Rufus was a 26-year-old, single man who worked at odd jobs. He drank with his friends at the cafe when he had the money. The group considered him the slow member of the fraternity. His exposure to Cynthia occurred also on March 10 and when he came to the clinic with Pat he also had negative smears and cultures. We did not know whether he had taken penicillin tablets, but it was considered unlikely.

7. Gloria (1f) was the 24-year-old single girl with a deceptively angelic

face. When examined at the clinic her smears and cultures were positive and she was treated on March 8. She named two contacts.

(7a) Adolph. Exposure occurred on February 23. Adolph was infected and treated on February 14 and had two subsequent reinfections, for which he was treated on March 15 and March 25.

(7b) Pat. Exposure occurred on March 6. He purchased penicillin tablets at a local drugstore so that when he was seen at the clinic on April 5 his smears and cultures were negative.

8. Johnny (3e) was the 26-year-old married man who stayed at home taking care of the baby while his wife worked. Johnny's urethral discharge began on March 12 and he was diagnosed and treated on March 13. Both smears and cultures were positive. Johnny named three contacts.

(8a) Belle. Exposure occurred on March 5. She was found to be infected and was treated on March 8; she had a subsequent reinfection and was treated on April 24.

(8b) Jezebel was a 20-year-old, well developed and vivacious married brunette who was separated and had three children. She was shrewd and calculating, yet very discreet in her actions. She would visit the tavern where the group congregated, pick out the most likely looking individual, and quietly leave the establishment. Although she drank, she did not do so to excess. Her latest steady boy friend was Johnny, who had exposures with her two to three times weekly. Jezebel's parents were divorced. Her husband, who came from a solid middle-class family, left her because of her extramarital affairs. She started divorce proceedings against him, but dropped them when she found she was two months pregnant. He promptly sued her for a divorce because of infidelity. Johnny's last exposure with Jezebel was on March 6. She was found to be infected, with positive smears and cultures, and was treated on March 17.

(8c) Kate was the 19-year-old, married woman who supported her husband. While she was not a particularly pretty woman, she had wholesome features and her devotion to her philandering husband was pathetic to watch. Her only exposure was with her husband. She returned from the hospital after delivering her baby on March 7; marital exposure took place on the day of her return. The smears and cultures were positive and she was treated with her husband on March 13.

9. Glenn (3f) was the big, husky, 26-year-old single male whose parents were divorced. Prior to coming to the clinic on March 11, he had had a persistent urethral discharge for a number of days for which he took oral penicillin. The urethral discharge was positive by smear and culture for gonococci and he responded to penicillin when treated on March 11. He named two contacts.

(9a) Belle. Exposure occurred on March 7. She was diagnosed and treated for gonorrhea on March 8 and was subsequently reinfected; treated April 24.

(9b) Lola was a 28-year old, single Negress who came from a nice home. She lived in a good neighborhood, was well mannered, and was active in community affairs. She did not feel that the Negro boys she knew were her social and intellectual equals and so did not date them. Most of her boy friends, therefore, were white. Her reputation among her boy friends was that she was a nice girl. Every two months or so she would have an exposure with one of her dates who was particularly attractive to her. Her exposure with Glenn was on March 1. It was shortly after this exposure that Glenn complained of the urethral discharge for which he attempted self-medication. Lola had clinical gonorrhea, but the diagnosis could not be confirmed by smear and culture. She was treated on March 12 with subsidence of her symptoms.

Epidemiologic Analysis

An epidemic or outbreak is defined as the occurrence in a community or region of a group of illnesses of similar nature, clearly in excess of normal expectancy, and derived from a common or propagated source.[4]

The number of cases of gonorrhea discovered during this outbreak was more than 20 times the average number of reported cases for the entire community for 1952-1956 inclusive. The propagated nature of the cases fulfills the requirement of the second part of the definition given above.

As the patients in this outbreak were diagnosed, they were interviewed for contacts in accordance with established policies.[5-6] Thus, they were questioned for all contacts to whom they were exposed within the maximum incubation period of gonorrhea, which is two weeks, and those other contacts whom they exposed after symptoms began. Because it is difficult to know when the first signs and symptoms of gonorrhea begin in females, they are interviewed for all sexual contacts within a month from the date of diagnosis.

In spite of the fact that patients were reinterviewed on each visit to the clinic, it was obvious that not all the names of their sexual partners were obtained. We have wondered ourselves whether in some instances the patients actually knew who their contacts were. Nevertheless, these patients revealed 2.9 contacts per patient (the contact-patient index).

Male patients named an average of 2.3 female contacts, whereas female patients named an average of 3.7 male contacts.

All the patients and contacts except one were white; the average ages of the patients were 28 years and that of their contacts 27.7 years. The average age of the male patients was 29 and that of their contacts 26 years. The average age of the female patients was 26 years and the mean age of the male contacts was 28 years.

About half the patients were single; one-fifth were married; and approximately one-third were separated or divorced. In contrast, 40 per cent of the contacts were single, another 40 per cent were separated or divorced, and the remaining 20 per cent were married. Analysis revealed no significant difference from this pattern for male and female patients and their contacts. Patients in this outbreak had an average of 8.5 years of schooling and their contacts averaged 8.9 years. There is no significant difference in years of schooling between the male and female patients.

The patients involved in the epidemic came from the low socioeconomic group and there were a few representatives of the low-middle group. Of those who worked, all could be classified as unskilled or semiskilled. Factory workers predominated.

All the patients and contacts were native born and were either first generation or second generation Americans. Most of them came from homes broken by divorce, separation, desertion, or maladjustment. Intimately associated with sexual promiscuity were other problems of adult delinquency, particularly those involving difficulties with the police. Associated also with each exposure was the influence of heavy drinking. Some patients already were chronic alcoholics, others were problem drinkers.

What can be learned from this experience? Clinically, it confirms the physicians' observations of how difficult it is to diagnose gonorrhea in the female without the help of laboratory and epidemiologic data. In contrast to the males, the early signs and symptoms of gonorrhea pass almost completely unnoticed in many females. Epidemiologically, this experience demonstrates what can and does happen when gonorrhea is introduced into a group of sexually promiscuous individuals.

This epidemic shows what can be done when clinical and public health medicine join forces. This group, particularly the female members, might never have been discovered without the interview for contacts of the original and each subsequent diagnosed infected case. What is more to the point, this outbreak reminds us that sexual promiscuity is basic to the spread of venereal disease. Furthermore, one cannot overlook the fact that in each community there is a focus or reservoir of infectious venereal disease.[7] This reservoir will fall as more and more cases are diagnosed and treated by the physician, but it will rise if infected cases are missed. To this endemic focus should be added the importation of infectious venereal disease by our traveling population. In the course of a year four to five million people move from one state to another and a roughly equal number within the states migrate from one county to another.[8]

If an infected patient belongs to a social group which is sexually promiscuous, the disease will be propagated in epidemic pattern. Understandably enough, promiscuous individuals tend to congregate with others of the same bent —a situation where "birds of a feather flock together." Hence there arises the necessity for interviewing all infected patients for contacts.

Finally, a word about promiscuity— as one examines the sex behavior of the patients in this outbreak, one cannot help but be struck by their craving to be wanted, to belong, and be loved. This is not peculiar to them, for the need to love and be loved is a basic desire in human beings. But sex is not love, nor is love sex. The sexual meanderings of our patients were not affairs of passionate love, nor were they instances of romantic love.

Here the relationships between the sexes were frank and uninhibited. There was also an element of equality between the sexes which in many instances led to sexual aggression on the part of the female because she felt she had as much right to sexual gratification as her male consort. This phenomenon of aggression was not entirely a surprise, since it is frequent even among nonpromiscuous married women and has been attributed to a natural and logical culmination of attempts at complete emancipation.

While sexual promiscuity is the cause of venereal disease, it is itself the end result of many converging factors. Primary among these is the instability of the home. One notices how frequently these patients came from broken homes, and their disturbed behavior perpetuated this pattern of unhappy home life in their own lives, culminating in separation or divorce. Equally important was the obvious lack of moral or religious convictions.

What of the future of these patients? The ease and speed of treatment have relegated gonorrhea in the minds of these people to the rank of a minor nuisance. Repeated reinfections have occurred even after the closing date of this study. Rehabilitation has been difficult and for most of them it has been fruitless so far.

The single most important lesson of this outbreak is that gonorrhea, like syphilis, will remain with us until more adequate control measures can be devised.[9] Our present control measures, even under ideal circumstances, are not geared to eradicate gonorrhea and syphilis, but merely to reduce their frequency. It is not surprising, then, that gonorrhea ranks second only to measles among the reportable infectious diseases in the United States.[10] Without pessimism or cynicism we conclude, realistically, it happened again. But where next?

REFERENCES

1. Fiumara, N. J., et al. An Outbreak of Gonorrhea and Early Syphilis in Massachusetts. New England J. Med. 256:982–990 (May 23), 1957.

2. Massachusetts Department of Commerce, Division of Research. Town and City Monographs, 1954.
3. U. S. Department of Health, Education, and Welfare. Directory of Venereal Disease Clinics. Washington, D. C.: Public Health Service Publ. No. 257, 1955.
4. Control of Communicable Diseases in Man: An Official Report (8th ed). New York, N. Y.: American Public Health Association, 1935, p. 14.
5. Fiumara, N. J. Ten principles of VD Contact Interviewing. J. Social Hyg. 35:322-327, 1949.
6. ————. Describing a Contact of Venereal Diseases. Am. J. Syph., Gonor. & Ven. Dis. 33:380-388, 1949.
7. ————. Venereal Diseases—Present and Future. A.J.P.H. 43:1443-1451, 1953.
8. U. S. Department of Health, Education and Welfare. The National Venereal Disease Control Program. Washington, D. C.: Gov. Ptg. Office, 1957.
9. Fiumara, N. J. Sic Semper Syphilis. Boston M. Quart. 8:101-109, 1957.
10. U. S. Department of Health, Education, and Welfare, Office of Vital Statistics. Morbidity and Mortality Weekly Report 5:4 (Oct. 23), 1957.

Dr. Fiumara is director, Division of Venereal Diseases, Massachusetts Department of Public Health, and assistant clinical professor of dermatology, Boston University School of Medicine; Dr. Todd is chief, State Cooperating Venereal Disease Clinic; Miss Young is public health nursing adviser, Division of Venereal Diseases, Massachusetts Department of Public Health; and Mrs. Wilson is venereal disease nurse epidemiologist, State Cooperating Venereal Disease Clinic, Boston, Mass.

Postgraduate Cerebral Palsy Courses

The College of Physicians and Surgeons at Columbia University is offering for the fall, 1959, term postgraduate cerebral palsy courses sponsored by the United Cerebral Palsy Associations. These are designed for physicians, therapists, and nurses to acquaint them with the basic knowledge concerning the disease, to review the present status of practical therapy, and to point out the controversial features of present understanding of the disease. The entire course is nine weeks, the first three of which is for the entire group. The final six weeks are for therapists and nurses. The program will be carried on from October 5 to December 4, ending for physicians on October 23. For them the fee is $100. For the full nine-week course the fee is $210. Further information and inquiry and application blanks from Postgraduate Course in Cerebral Palsy, College of Physicians and Surgeons, 630 West 168th Street, New York 32, N. Y.

The title of the following paper speaks for itself. It is a challenge to health program administrators to examine and to evaluate objectively their use of professional personnel before crying for more staff.

HOW TO ACHIEVE MORE EFFECTIVE USE OF PROFESSIONAL STAFF TIME

A PROGRAM DIRECTOR'S GUIDE

Harvey L. Shapiro, M.A., M.P.H., F.A.P.H.A.

The Need

IT IS COMFORTING to add one's voice to the widely heralded and accepted belief that there is an absolute shortage of well trained and qualified professional public health personnel in all its subspecialties. Open concurrence with this belief offers many advantages. These include the feeling of being relieved of the necessity for taking positive program action; it fixes responsibility on the professional organizations and agency personnel offices to do the recruitment; and it provides a handy, impersonal reason for many important program inadequacies.

Needless to say, a maternal and child health program without a pediatrician, medical social worker, public health nurse, or nutritionist does have a positive personnel shortage. This presentation does not discuss recruitment technics, although attraction of capable professional people to work in organizations which make maximal use of professional backgrounds should not be underestimated.

However, the shortage of personnel seems generally to have been abused as a reason for lack of progress in public health programs where basic professional coverage for its elemental components is provided. Beyond this point, use of this reason should require reasonable, precise, and factual response to the query, "How effectively are you using the professional people you already have?" The almost reactive response of health program directors to this key question is that their professional people are already heavily burdened, work long hours, and are still unable to meet the program demands placed on them. Clearly such a response, while creditably defensive of one's staff, begs the question completely by failing to respond to the question's focus on the effectiveness of professional staff utilization. Often, when the response to this question is based on factual and objective study, the effective use of professional staff is seldom found to reach half of the available potential.

This means that if there were optimal utilization of professional training and skills, an effective doubling of professional staff coverage might be achieved without the addition of staff. For this desirable end most thoughtful program directors would be willing to undertake needed preparation. Unfortunately, the literature seems devoid of help or guidance for a program director so disposed.

The Definition

The reactive answer referred to previously is a fair one in the absence of an acceptable definition of the essential nature of genuinely professional staff activity. Specifically, "professional staff activity" is strictly defined here as being that which requires the formal professional training, experience, and understanding of the professional staff member concerned. Thus, such activity simply cannot be performed acceptably by one with lesser or other training and experience. Its effective performance is dependent on the requisite professional knowledge, insight, and skill. It is not defined as any activity which a professional person performs or is asked to perform—the definition in most common usage.

The Test

With the establishment of this definition, the foundation is laid for the answer to the basic question of how effectively each professional staff member's services are utilized.

A test of the extent to which a program director can state with certainty that the time of his professional staff is used effectively is contained in the following check list:

1. Are all the specific and detailed requirements for each professional job in the organization clearly outlined?
2. Does each activity undertaken require fully formal professional preparation possessed by the staff member concerned?
3. What specific activities are undertaken by professional staff members which might be performed by staff with lesser or on-the-job training if they were available?
4. What approximate percentage of total work time is spent on each of the activities outlined in the three preceding responses?

The Problem

Unless the answers to these questions have been consciously and thoughtfully evaluated for each member of the professional staff, the feeling of assurance that their available time is producing optimal professional results is at best wishful thinking. In studies conducted by the author on a variety of professional positions in health and medical care agencies, except for outright clinical positions, the maximum effectiveness of utilization was found to be 50 per cent. The minimum utilization of professional background was zero. However, the proportion indicates only the extent of the problem. Its existence can be presumed to be general in the absence of valid evidence to the contrary.

If one were to generalize on the basis of this experience that on an average 50 per cent of the time of every professional public health worker is used on professional activities as defined, what are its implications? It would mean simply that half of the available professional time is being used for nonprofessional work. Thus there is a need for more scarce professional people so that two may do the work of one.

If this premise is sound, is there need to accomplish the following?

1. Reexamine the validity of the assumptions and beliefs regarding the shortage of trained public health personnel for special programs?
2. Look objectively and critically at the "professional" work which is being done to determine: (a) whether each activity performed is still required in its present form to meet current program needs, and (b) if there are other areas of professional program need we have been neglecting simply because time is not currently available?

The Challenge

Disconcerting though it may be to some, the burden of this message is that the problem of effective professional staff utilization belongs to the program or bureau director, as does the responsibility for attacking and resolving it in a thoughtful manner. This is not a function of a super agency or higher authority. In fact, a superior agency organiza-

tion may meet its needs and limitations simply by cutting or freezing the professional program's staff budget. Thus, within such restrictions, the program is left to its own devices to sink or swim as best it can. It is clearly preferable that this challenge be met by the program director rather than by higher administrative authority.

The Principles

If the problem is recognized, the need for action acknowledged, the definition adopted, the test considered valid and the challenge accepted, then a straightforward approach based on sound human and administrative considerations and principles needs to be undertaken. Succinctly these major principles are:

1. That there be a genuinely felt need for a program of action on the part of all the staff concerned.
2. That the purpose and methods be crystal clear, fully understood, and accepted by all participants. It is desirable that they take active part in the selection of methods and in the process of adaptation.
3. That the action plan be fully worked out in advance and that it be carefully scheduled and carried out to its logical conclusion.
4. That the staff concerned be informed of results, take part in their interpretation, and assist in the planning and implementation of changes resulting from the findings.
5. That there be enough flexibility in the program structure to permit use of persons with lesser training for performance of the quasi and nonprofessional tasks.

To neglect any one of these fundamental principles in this process is to court failure. The values to be achieved by recognition of these principles in the planning stages will more than justify the required time and effort.

The Method

While one may even accept the outlined principles as being reasonably self-evident, paralysis generally sets in at or near the point where the program agreed on is to be launched—in this case where the use of professional time is actually to be studied. The reasons for this paralysis lie close to the surface, because once committed to such a course, change, with its implicit threat to status and security, may actually come to pass. No one cares to learn that his time is being used at less than at its maximum effectiveness.

Thus it is imperative that the method used be simple, clear, and immediately understandable by all the participants. Its preparation should take minimal time and its use require no training course. One method which has met these criteria in practice is the following:

1. Professional staff members of most public health programs generally consider themselves sorely beset by myriad demands with limited time available to sort out and meet these demands on a consistent basis. This is the reservoir from which positive support for a study of the utilization of professional staff time can be drawn. Such people are not afraid of a finding that they are not doing enough; this is their first real chance to show how much they really are doing. If this feeling has been openly expressed, then the mandate of the first of the listed principles has been met.

2. The manner in which the specific study proposal is presented is crucial. At this point success or failure can be assured. One has to take account of the feelings and reactions of the staff to whom the study is proposed so as to carefully avoid or remove any overtones which seem to threaten its security. For this reason full and complete discussion of the need for objective demonstration of work load components and possible methods is required.

3. Explore the method and form suggested in this paper, any usable adaptation of it, or even a completely different but suitable system. In any case, the purposes and objectives of such a study

must be clear, understood, and accepted by all concerned.

4. If the form suggested here is used (see Figure 1),* develop with the staff concerned in the study the headings to be used for the functional aspects of the job, based on specifically stated objectives. The headings should cover those aspects of the job which take up the major proportion of the professional work time. It is often desirable for the program director to conduct a preliminary study on his own time distribution and share it with the staff, along with its interpretation.

5. Ask the person or group concerned to conduct a one-day test study. Review the results with them, and recast the headings as needed on the basis of the one-day experience.

6. Determine, with the persons involved, what constitutes, for their particular jobs, a representative period or periods of time to be studied.

7. Conduct the study as agreed upon and have the staff concerned tabulate the results of their own activity (total elapsed time for each class of activity).

8. Calculate the time spent in each activity class as a ratio or percentage of the total elapsed time for the selected period. These calculations should be verified by the spot-check method since they are crucial in the analysis process.

9. Analyze the study results in terms of specific program objectives as suggested below.

10. On the basis of the results of the study, actually shift program or staff emphases, reassigning functions which are more appropriately carried by others to the extent that agency policy will permit. Similar studies may be performed on selected clerical and technical positions. This will permit rearrangement of their functions to accommodate others being downgraded.

* All entries in Figure 1 are to be handwritten by the person whose position is being studied.

The method described here and the form detailed below together provide a workable administrative mechanism. It is self-classifying, easy to tabulate, and imposes little hardship on the persons doing the recording. Far more important, however, is the preparation of the ground for its use in terms of the basic human considerations and principles outlined previously.

A substantial "bonus" value is inherent in use of this method. It provides objective substance (often for the first time) to requests for changes or increases in existing program staffing patterns.

The Form

Time Start—The actual clock time at which the specific single activity began. Travel time to the activity might be included or tabulated separately if significant. Certainly, getting to the place of the activity is an important part of that activity. Do not include rest periods, coffee breaks, lunch, or other nonproductive time. Their timing might raise doubt regarding study purposes despite contrary reassurances.

Time Stop—This is the actual clock time the specific single activity stops.

Brief Description of Activity—Fewest possible number of words to give activity qualitative meaning for verification of classification of activity, e.g., "Phone call re condition of patient."

Headings—To be created specifically and entered for the job or jobs being studied. Enter total elapsed time in minutes under appropriate heading. The purpose or study objectives will condition in the largest measure the headings to be used. Unless they are clear, the data will be meaningless.

Totals by Day and Summary for Study Period—(Selection of "representative period," e.g., one day, one week, one week each at four different seasons etc.)

Figure 1—Department of Health (City, State)—Professional Activity Study Chart

Name *A. H. Jones* Position *Medical Social Consultant* Division or Bureau *Crippled Children* Date 10-29-58 Page 1 of— Pages

Time Start	Time Stop	Brief Description of Activities	Major Activities of Position (Enter elapsed Time in Minutes Only)											Do Not Use
			Staff Conf.	Direct Case Work	Arrange Transp.	Case Record-ing	Consul-tation	Typing and Filing	Reports	Travel	Other Clerical		Other	
9:10	9:32	Conf. with caseworker re case handling	22											
9:32	9:35	Phone call from agency re patient		3										
9:35	10:10	Conf. with patient re problem		35										
10:10	10:23	Arrange patient transp.			13									
10:30	10:41	Search for case records						11						
10:45	11:05	Dictation of case record summaries				20								
11:05	11:12	Consult with PHN re CC case					7							
11:12	11:20	Type referral form to hospital						8						
11:20	11:24	File records after dictation						4						
11:24	11:50	Draft weekly statistical report							26					
11:50	11:59	Arrange clinic transp. for staff			9									
12:00	12:17	Gather case records for clinic						17						
1:15	1:30	Travel to clinic								15				
1:30	2:15	Register patients at clinic									45			
2:15	2:32	Meeting with parent re needed brace		17										
2:32	2:40	Discuss case with clinic physician					8							
2:40	3:20	Interview patients and parents at clinic		40										
3:20	3:51	Postclinic conference participation					31							
4:00	4:30	Prepare Clinic summaries for staff							30					
4:30	4:45	Travel, clinic to office								15				
4:45	5:00	Re-file case records						15						
		Total 391	22	95	22	20	46	55	56	30	45			
		Per cent 100	6	24	6	5	12	14	14	8	11			

Its Preparation

1. Total each activity column for a representative period, after spot-checking for accuracy of classification of activities.

2. Take the grand total of elapsed time for all recorded activities for entire representative period.

3. Divide the total elapsed minutes for each activity by the grand total of elapsed time for all activities. This furnishes the percentage of time spent on each activity.

4. Prepare a separate list of activities and related percentages.

Analysis

Typical questions should be asked on basis of study results in possible sequence. You are urged to record results in writing:

1. *For each of the the activity classifications listed:*

(a) Does this really require the professional training, experience, and judgment of the person concerned? On the exhibited study form note all items under headings "Typing and Filing" and "Other Clerical" which account for 25 per cent of all productive time spent by the medical social consultant.

(b) If not, can an intelligent person with less preparation be taught to handle this aspect (e.g., a clerk, administrative assistant, case aide, secretary)? It would certainly seem that not only might a clerical person have performed the noted typing, filing, and clerical services, but this individual might in addition have arranged needed transportation for the staff and for the patients, prepared the weekly statistical report, and recorded the clinic reports noted. This would have meant a saving of professional time of approximately 45 per cent.

(c) What percentage of total time does each such activity take?

(d) Are each of these activities required at all in terms of the stated purposes and objectives of the employing agency, or of the profession itself, or to meet specified recognized needs of the community, or of the beneficiaries served? The frequency of reporting, for example ("prepare weekly statistical report") should cause immediate question as to the need and uses of such reporting as well as its content.

2. *For the complete spread of activity classifications and percentages*

(a) Where are the major emphases being placed in this position and in what order of priority or stress? If the exhibited study were representative, it seems that over 40 per cent of the time is spent on nonprofessional activity as defined, 12 per cent on "Consultation," and 24 per cent on "Direct Case Work." It is apparent that the consultation role is neglected here. Such emphases should be planned consciously; they should not just happen that way.

(b) Are these emphases consistent with program objectives for the position? (For example, is the medical social consultant spending a disproportionate percentage of her time on direct case service instead of consulting with public health nurses and doctors in interpreting social needs of mothers and children?)

(c) Are the activities appropriately stressed and in balance with each other? Or is there undue stress on certain aspects to the exclusion of others seriously needed? In other words, is the job lopsided?

(d) What activities not included at all should be made a part of this position, in keeping with the changing needs in the community served?

(e) What functions and related percentages would constitute an ideal distribution of functions and stresses under both existing and potentially developing situations?

(f) How does the ideal distribution compare with the actual distribution? To what extent, in what order, by what means, and by what date may they be brought into optimal balance?

(g) How might these data best be presented in support of proposed changes in program and/or staffing pattern?

Summary

Presented here is a realistic action alternative to meet the progressive shortage of professional personnel found in public health programs. It outlines the need for constructive action; it challenges the health program director immediately concerned; it presents the principles on which a realistic approach must be made if it is to be effective; and finally it suggests a specific method and program for adaptation to suitable situations. In sum, it outlines a method for evaluating and making more effective use of available professional public health personnel. The flexibility of the method suggested insures its adaptability to all classes of positions, including the technical and clerical ones.

Only by the thoughtful and perceptive use of such administrative methods, can the benefits of full and effective professional staff utilization accrue to a public health program. It requires courage to undertake, effort to conduct, thoughtfulness and sensitivity to analyze and program vision to act on effectively in terms of meeting program needs. The results to be achieved in enhancement of staff morale and program productivity by the use of this method are more than worth the effort of its undertaking.

Mr. Shapiro is assistant to the executive vice-president and medical director for professional affairs, Albert Einstein Medical Center, Philadelphia, Pa.

This paper was presented before the Maternal and Child Health Section of the American Public Health Association at the Eighty-Sixth Annual Meeting in St. Louis, Mo., October 28, 1958.

Felix Underwood Memorial Building

The new Felix J. Underwood State Board of Health Building in Jackson, Miss., was dedicated on April 17. In representing the Public Health Service, David Price, M.D., director of the Bureau of Medical Services, praised Dr. Underwood's 34 years as head of the State Board of Health which brought him national and international recognition as a public health pioneer. The president of the State Medical Association, Guy T. Vise, M.D., in behalf of its 1,400 members, presented a pair of golden scissors which were used in the ribbon cutting ceremony. The chairman of the State Board of Health, R. B. Caldwell, M.D., said "We are still wondering how Dr. Underwood led us to become the number one health department in the United States."

George Rosen, M.D., Editor
Berwyn F. Mattison, M.D., Managing Editor

Editorial Board

Granville W. Larimore, M.D., Chairman
Howard W. Ennes, Jr., M.P.H.; John J. Hanlon, M.D.; Frank L. Horsfall, Jr., M.D., Lucile Petry Leone, R.N.; Myron E. Wegman, M.D.; The Editor and Managing Editor

Staff

Willimina Rayne Walsh, Associate Director; Frances Toorock, Editorial Associate; Elizabeth Kellogg, Editorial Assistant; Lydia Gari, Editorial Assistant

Journal of Public Health

EDITORIALS

Hospitals and Public Health

Of all organized health services in American life, the strongest sector is probably represented by the general hospital. Certainly the largest fraction of the "health service dollar" is spent on hospital care, constituting about 33 per cent of all health expenditures and almost 2 per cent of our national income. To both patients and physicians, the hospital is more widely identified as the focus of health service than is any other agency or health program.

Yet public health agencies have, on the whole, done little to become associated with the 6,800 hospitals in the United States. Here and there, joint housing of the two has been established and relationships worked out in specific fields. Public health nurses may visit mothers to establish contact before they leave the maternity ward, health educational materials may be distributed in the hospital lobby, or a venereal disease clinic may be held in the outpatient department. But even these measures of cooperation are exceptional.

In 1948, the American Hospital Association and the American Public Health Association issued a joint set of recommendations on "Coordination of Hospitals and Health Departments."[1] This called for physical pooling of laboratory and clinic facilities and cooperative activities in communicable disease control, health education, public health nursing, and other fields. In 1951, Terris reported on the advantages and problems of 24 local situations where hospitals and health departments were jointly housed.[2] The values of expanding preventive services in hospitals (with or without health department liaison) have been emphasized by Bayne-Jones,[3] Dearing,[4] and others. In 1953, the Eighth International Hospital Congress was devoted to the topic "Preventive Medicine as a Function of the Hospital" and particular attention was given to the important role of the outpatient service.

These pleas have had an impact on hospital administration, more perhaps through encouragement of preventive concepts in patient care than through inducement of organizational connections with health departments. Routine chest x-rays on all hospital admissions, for example, are now widely practiced, although the radiation hazard is causing a second look. Patients with dietary problems commonly get instruction before discharge from a hospital dietitian or nutritionist. The routine urinalysis,

done in practically all hospitals, is, after all, a case-finding measure for diabetes. Staff nurses on maternity wards contribute to the education of the mother, especially the primipara, on infant care.

Far more could, of course, be done to incorporate prevention into hospital practice and to coordinate the resources of public health agencies with those of hospitals. But there is another form of relationship which bears more attention and which might yield far-reaching consequences. This is the potential role that health officers or other health department leaders could play in advising hospital boards of directors on over-all policy.

The voluntary nonprofit institution is the mainstay of our general hospital system in the United States, and it is conventionally governed by a board of directors. It is rare for a physician to be a member of this board, since the practicing doctor has, to some extent, a special personal interest in board decisions. Yet the board requires technical advice on health and medical care questions. In the overwhelming majority of hospitals, where the administrative officers are nonmedical, this advice is sought from committees of the medical staff. It is common, however, to find tensions or even mistrust between the board and the medical staff.

The full-time health officer is one physician in any community who is trained in medical affairs and at the same time is quite free of any personal interests involving patient care. He is knowledgeable about community health needs and methods of meeting them. As the appointee of a public authority, he represents the citizenry and is dedicated to the public interest. Some hospital boards, in recognition of these advantages, have appointed health officers to board membership. In at least one Canadian province, this is required under the hospital licensure law.

The potentialities of such involvement of health officers in hospital policy determination, however, have hardly been explored. Relationships may be easiest in small one-hospital communities, but they can be developed to some extent anywhere. As a board member or adviser, the health officer could help hospital boards appreciate their role as community health leaders. It is no secret that many hospital boards are quite insensitive to their theoretical duties beyond the approval of expenditures.[5] Yet decisions in fields like chronic disease control, rehabilitation, home care, mental health, outpatient service, regionalization, group medical practice, research programs, professional education, medical audits, or wide spheres of social service call for the kind of judgment and viewpoint which a modern health officer is in a position to offer.

The hospital administrator is often a man caught in the middle—facing demands from the board on the one hand and the medical staff on the other. To him the health officer can be a friend indeed. Many hospital administrators are quite unaware of the positive role a public health officer could play; they may even fear him as an official of government who might threaten their freedom of voluntary action. It is up to the health officer, therefore, to take the initiative and acquaint hospital administrators and boards with what he might have to offer. In so doing, health departments would not only be helping the general hospital to fulfill its classical quartet of functions—patient care, prevention, professional education, and research—but also would be widening their impact on the health of the community through a channel of enormous scope and promise.

1. Coordination of Hospitals and Health Departments. A Joint Statement of Recommendations by the American Hospital Association and American Public Health Association. A.J.P.H. 38,5:700-708 (May), 1948.
2. Terris, Milton. Joint Housing of Hospitals, Health Departments and Laboratories (Survey of Joint Housing). Ibid. 41,3:319-325 (Mar.), 1951.
3. Bayne-Jones, Stanhope. The Hospital as a Center of

Preventive Medicine. Ann. Int. Med. 31,7:716 (July), 1949.
4. Dearing, W. Palmer. The Hospital and Public Health. Hospitals (Sept.), 1953, pp. 86-88.
5. Unpublished data on a study of the functions of hospital trustees, by F. C. LeRocker, Sloan Institute of Hospital Administration, Graduate School of Business and Public Administration, Cornell University.

(The Journal is indebted to Milton I. Roemer, M.D., director of research, Sloan Institute of Hospital Administration, Cornell University, Ithaca, N. Y., for the preparation of the above editorial.)

Repeated Poisonous Snakebites in Man

POISONOUS SNAKEBITES are far from rare in the United States. This is particularly true in the Southeast and the Southwest. The number of snakebite accidents has been estimated at from 2,000 to 3,000 annually and there were 71 deaths due to snakebites during the five years, 1950-1954.

One of the more interesting aspects of this problem is the occurrence of repeated bites by poisonous snakes in the same individual.[1] Persons who handle poisonous snakes routinely in the course of their work or for some other reason are likely to sustain such accidents. Among biologists, especially herpetologists and curators of reptiles in zoos and museums, and among religious faddists who use poisonous reptiles in their ceremonies, poisonous snakebites are an occupational hazard. Watt, Parrish, and Polard, for instance, have reported the case of a professional herpetologist who was bitten by 10 poisonous snakes in a period of 12 years and survived.

What are the consequences of such repeated bites in the same individual? It has been commonly held that repeated poisonous bites render the victim immune to venom and reduce the danger of future bites; that the person will develop an allergy to the proteins of the snake poison, thus making subsequent bites more dangerous because of the possibility of an anaphylactic reaction; and that previous bites by poisonous snakes have no effects on subsequent bites. Parrish and Pollard examined this problem in terms of the case histories of 14 patients who were bitten two or more times by North American pit vipers and concluded on the evidence from these cases that bites by pit vipers do not produce permanent immunity. This conclusion may be the result of several factors, such as the administration of antivenin, bites by different species of pit vipers, and prolonged and irregular intervals between envenomations. Furthermore, these investigators found hypersensitivity to pit viper venoms and they conclude that death may result from snake venom allergy. Finally, this study indicates that blood from patients with a history of previous bites by pit vipers is no better for transfusions in treating snakebites than the blood of persons who have not been bitten. The practice of transporting snakebite victims long distances for such transfusions should be discouraged. Certainly, all those concerned with accidents will be interested in this report and its implications.

[1] Parrish, Henry M., and Pollard, C. B. Effects of Repeated Poisonous Snakebites in Man. Am. J. M. Sc. 237:277-286, 1959.

LETTER TO THE EDITOR

TO THE EDITOR:

Re: Air Sampling and Other Control Techniques in Study of Hospital Staphylococcal Infection

Review of reports[1,2] on the mechanism of transmission of hospital acquired staphylococcal infection has impressed us with the fact that some of the practices familiar in this installation have seldom been used in hospital studies.

Quantitative sampling of air has not been employed as much as our experience would indicate is desirable. To determine the time of appearance and the concentration of staphylococci, a slit sampler[3,4] which impacts air-borne organisms onto an agar plate is suitable. This sampler operates for one or two hours. The sieve sampler[5] is mechanically simpler, but it does not provide a time-concentration relationship, and is operable for only ten minutes. Settling plates do not give quantitative measurement of the concentration of bacteria in the air.

To provide bacterial-free air, high efficiency fiber glass filters[6,7] offer the advantages of low initial cost, no maintenance cost, an effective life of one to two years especially if pre-filters are used, and easy replacement. However, care must be taken to install the filters properly to avoid leakage through imperfect seals. To obtain maximum benefit it will be necessary to pressurize the room to a minimum of 0.2 inch of water. This will eliminate the introduction of contaminated air from corridors and other areas. If the filter blower does not have the capacity to provide the additional pressure then an auxiliary blower may be installed.

Decontamination of rooms, wards or buildings is most easily done by a gaseous disinfectant. Formaldehyde has the serious disadvantage of persistency and slow bactericidal activity.[8] The closure of wards, nurseries, or operating rooms for days or a week at a time for the purpose of decontaminating with formaldehyde is not feasible. However, closure for no more than 24 hours is often possible. This is ample time to (1) decontaminate the area with beta-propiolactone vapor, and (2) aerate the area.[9] Beta-propiolactone, like formaldehyde, can be used only in uninhabited areas since a low concentration of the lactone in air is irritating to man. Therefore, thorough terminal aeration is mandatory. Small areas can be decontaminated in one to two hours and aeration completed within three to four hours by forced ventilation. Larger areas will require two hours exposure to the chemical vapor and somewhat longer to aerate, the time being dictated by the ventilation procedure. Beta-propiolactone vapor is noncorrosive in the concentration and time required, but care must be exercised to prevent the liquid lactone from collecting on varnished or painted surfaces where it can soften and damage the finish.

More detailed information regarding air sampling and decontamination in the study of hospital staphylococcal infections may be obtained from Technical Development Laboratories, Communicable Disease Center, Public Health Service, Department of Health, Education, and Welfare, P. O. Box 769, Savannah, Ga. Attention: Equipment Development Section. This agency has agreed to serve as a technical service center for this and other similar information.

REFERENCES

1. Hospital-Acquired Staphylococcal Disease. Proceedings of the National Conference. U. S. Dept. of Health, Education and Welfare, Public Health Service, Bureau of State Services, Communicable Disease Center, Atlanta, Ga. (Sept.), 1958.
2. Selected Materials on Environmental Aspects of Staphylococcal Disease. U. S. Dept. of Health, Education and Welfare, Public Health Service, Bureau of State Services, Communicable Disease Center, Atlanta, Ga. (Jan.), 1959.

3. Decker, H. M., and Wilson, M. E. A Slit Sampler for Collecting Air-Borne Microorganisms. Applied Microbiol. 2:267–269, 1954.
4. Kuehne, R. W., and Decker, H. M. Studies on Continuous Sampling of Serratia marcescens Using a Slit Sampler. Ibid. 5:321–323, 1957.
5. duBuy, H. G.; Hollaender, A.; and Lackey, M. D. A Comparative Study of Sampling Devices for Air-Borne Microorganisms. Pub. Health Rep. (Supplement No. 184), 1945.
6. Decker, H. M.; Harstad, J. B.; Piper, F. J.; and Wilson, M.E. Filtration of Microorganisms from Air by Glass Fiber Media. Heating, Piping and Air Conditioning 26:135–138, 1954
7. Decker, H. M.; Harstad, J. B.; and Lense, F. T. Removal of Bacteria from Air Streams by Glass Fiber Filters. J. Air Poll. Cont. A. 7:15–16, 1957.
8. Phillips, C. R. "Gaseous Sterilization" (Chapter 30) in Antiseptics, Disinfectants, Fungicides and Sterilization. Edited by Reddish, G. F. Philadelphia, Pa.: Lea & Febiger, 1957.
9. Hoffman, R. K., and Warshowsky, B. Beta-propiolactone Vapor as a Disinfectant. Applied Microbiol. 6:358–362, 1958.

HERBERT M. DECKER, M.S., ROBERT K. HOFFMAN, M.S., and A. G. WEDUM, M.D. U. S. Army Chemical Corps, Fort Detrick, Frederick, Md.

Psychiatric Treatment Insurability

Group Health Insurance is undertaking an experiment in prepaid insurance to cover psychiatric treatments. Under this program GHI will pay for short-term treatments of mental illness, including individual and group psychotherapy, electro-shock treatments, psychological testing, and 30 days of hospital care. A sample of the 75,000 persons included among the 30,000 subscribers to GHI's family doctor plan, is eligible for this coverage. The occupational distribution of this group is 50 per cent unskilled or semiskilled workers, 25 per cent clerical workers, 17 per cent skilled workers, and about 4 per cent each executive and professionals. The sample is being selected with the assistance of W. Edwards Deming, professor of statistics, New York University.

Co-sponsors of the project are the American Psychiatric Association and the National Association for Mental Health. A grant from the National Institute of Mental Health, added to GHI's funds, is supporting the program. Chairman of the Advisory Committee is Harvey J. Tompkins, M.D., chairman, New York City Community Mental Health Board, and director, Psychiatric Division of St. Vincent's Hospital. Leo Perlis, national director, AFL-CIO Community Services Activities Committee, is vice-chairman.

Group Health Insurance, first organized in 1938 with 16 subscribers and 8 physicians, opened its subscription rolls to the public in 1941. It now has an enrollment of half a million persons, with annual premiums in force of $11,000,000. It operates in a 20-county area of New York State.

ASSOCIATION NEWS

EIGHTY-SEVENTH ANNUAL MEETING
AMERICAN PUBLIC HEALTH ASSOCIATION
ATLANTIC CITY, N. J.—OCTOBER 19–23, 1959

Another Behavioral Science Study

Why do people overutilize some and underutilize other health services? What aspects of health education "get across" to the community and what do not? How do patterns of living influence the behavior of people in regard to disease, its prevention, and early treatment? How can the methods and findings of the behavioral sciences be applied in a health department?

Answers to these and other questions will be sought in a project being established under the sponsorship of the Committee on Behavioral Sciences in Public Health of the Association in cooperation with the Philadelphia Department of Public Health and its director of public health services, John J. Hanlon, M.D. Described as the "introduction of behavioral science in a city health department," the project is supported by a three-year appropriation of $55,600 from the Russell Sage Foundation.

Public health leaders are aware that the concepts and skills of the behavioral sciences need to be utilized in modern approaches to health problems. Thus far, relationships between social scientists and professional health people have been pursued mainly in academic settings, such as schools of public health, and are resulting in the incorporation of the behavioral sciences in teaching and research programs.

The fact is, however, that most of the actors and activity that constitute public health in this country are found not within the walls of educational institutions, but in voluntary and official health agencies in the community. Hence, the present project, which recognizes that with the growing importance of noninfectious and stress disease knowledge of human behavior has become as significant as knowledge of bacteriology and epidemiology in approaching many community health problems.

Gertrude Woodruff, Ph.D., cultural anthropologist, will staff the project under the supervision of Edward Wellin, Ph.D., field director of the APHA's Study of Behavioral Sciences in Public Health. Dr. Woodruff has recently completed special postgraduate training at the Harvard School of Public Health. During the summer she will participate in a field study of population dynamics and control being carried out in India by the Department of Epidemiology, Harvard School of Public Health. She will undertake her duties in Philadelphia in the fall.

School Health Section Publishes

Two committees of the School Health Section have recently published reports in the Journal of School Health. The "Report of the Committee for Hearing Conservation" is in the May, 1959, issue and represents the culmination of three years' work. This committee, which is headed by C. Adele Brown, M.D., direc-

tor of health, Oswego (N. Y.) public schools, is a joint committee with the American School Health Association. The study recommends setting up agencies and procedures to expedite early detection of hearing loss, proper medical referral, and provision of special educational services when necessary, collection of data for determining an optimum hearing program and policies concerning testing personnel, and finally a national committee to analyze present laws with the purpose of recommending nation-wide legislation. In these policies autonomous state leadership is recommended although federal funds might be solicited.

The second publication, "Report of the Committee on Research Aspects of Competitive Athletics," is in the June Journal of School Health. The chairman of this committee was J. Roswell Gallagher, M.D., chief of the adolescent unit, Children's Medical Center, Boston. In the preparation of the report informal discussions were held with similar committees in the American Academy of Pediatrics and the American Medical Association, as well as with members of the ASHA.

The recommendations of the committee are chiefly in the direction of the spread to many more students of the recreational, social, and health values of competitive sports. For this purpose it suggests finding out whether school systems devote adequate time for exercise. It also suggests the need for adequate trained personnel and facilities, especially for such activities as soccer, volleyball, square dancing, and other activities that can be pursued in later life and that require relatively little in expensive equipment.

Who Are Public Health Students?

At a recent meeting of the Committee on Professional Education a "Student Census Card" was approved on the basis of which CPE might set up a clearing house of information on students in the 13 accredited schools of public health. These cards have been sent to the schools so that they may be completed by the students registered for the academic year 1958-1959.

These cards will be tabulated by the CPE. Thus, there will be in greater detail than has heretofore been available information on age, sex, previous training and experience, state and nationality of candidates, and sponsorship of the candidate's training. The program and the degree for which he is registered are other items.

87th ANNUAL MEETING
HOW TO MAKE HOTEL AND MOTEL RESERVATIONS FOR THE ATLANTIC CITY MEETING

A **HOUSING BUREAU** will be operated by the Atlantic City Convention Bureau. Since all requests for rooms will be handled in chronological order, you are urged to send in your reservation as quickly as possible. (Map showing location of hotels and motels and reservation form appear on page 952.)

HOTELS AND RATES*

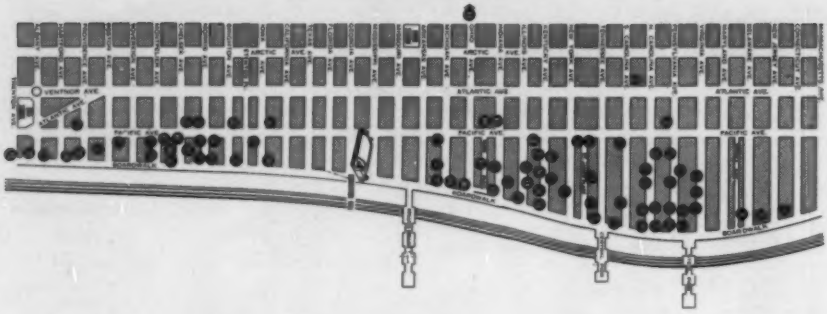
Map No.	Hotels	Rooms with Bath Single	Rooms with Bath Double	Two Rooms—One Bath 2 Persons	Two Rooms—One Bath 3 Persons
10	Abbey	$7.00– 8.00	$8.00–12.00		
57	†Ambassador	8.00–18.00	10.00–22.00	$20.00	
1	Breakers	4.00– 7.00	7.00–18.00	8.00	$13.00–20.00
20	Carolina Crest	6.00– 7.00	8.00–11.00		
16	Chalfonte		10.00–17.00		22.00
43	†Claridge	9.00–15.00	13.00–19.00		
13	Colton Manor		12.00–16.00		15.00
29	Columbus		8.00		
44	Crillon	10.00	11.00–12.00		
50	†Dennis	7.00–11.00	10.00–24.00	20.00	20.00
46	Eastbourne	6.00– 8.00	9.00–11.00	14.00	16.00
28	Flanders	7.00– 8.00	9.00–12.00	12.00	15.00
9	Holmhurst	5.50	8.00	10.00	12.00
36	Jefferson	7.00	9.00–10.00		
37	Kentucky		7.00– 8.00		12.00
18	†Lafayette	10.00	12.00	16.00	18.00
40	†Madison	6.00– 8.00	8.00–14.00		12.00–16.00
67	Mark	5.00– 7.00	6.00–10.00		
48	†Marlborough–Blenheim	9.00–11.00	12.00–20.00	15.00–18.00	18.00–21.00
26	Mayflower	6.00– 8.00	8.00–14.00		
32	Monticello	5.00	7.00	10.00	12.00
4	Morton	6.00– 8.00	9.00–12.00		
25	New Belmont	4.00– 5.00	6.00–10.00		13.00
24	New Drake	6.00	7.00–10.00	12.00	14.00
64	Old English		10.00–12.00		
22	†Penn-Atlantic	4.00	7.00		11.00
77	†President	7.00–12.00	10.00–20.00		
33	Richfield–Boscobel	4.00– 6.00	6.00– 8.00		
47	Runnymede		7.00–10.00		
2	St. Charles	10.00	12.00–14.00		
7	†Seaside	7.00–10.00	10.00–18.00		21.00
23	†Senator	8.00–14.00	12.00–18.00	16.00–20.00	20.00–24.00
51	†Shelburne	8.00–22.00	10.00–22.00		21.00–27.00
54	†Sheraton Ritz–Carlton	8.00–10.00	10.00–20.00		
35	Sterling	5.00– 6.00	8.00–10.00	9.00–10.00	12.00

* The above rates are subject to 3% Municipal Tax. † Suites available.
Some Hotels and Motels may require a deposit.

MOTELS AND RATES*

Map No.	Motels	Rooms with Bath Single	Rooms with Bath Double
60	Algiers		$10.00–12.00
12	Aristocrat		10.00–18.00
63	Baronet		8.00
21	Carolina Crest		10.00–14.00
62	Castle Roc		12.00–16.00
39	Continental		10.00–14.00
17	Coronet	$10.00	12.00–16.00
56	Diplomat		10.00–14.00
58	Dunes	8.00–10.00	12.00–16.00
45	Eastbourne		12.00–16.00
55	Eldorado		12.00–14.00
52	Empress	10.00	10.00–22.00
30	Envoy	7.00– 9.00	8.00–12.00
69	John's	6.00	8.00–12.00
66	†LaConcha	12.00	12.00–16.00
34	Lombardy		10.00–18.00
70	Malibu	8.00	10.00–16.00
61	†Mardi Gras	10.00	10.00–14.00
65	Martinique		10.00–12.00
27	Mayflower		8.00–14.00
76	Monte Carlo Beach	6.00	10.00
14	Monterey		10.00–12.00
75	Nautilus		10.00–12.00
3	Ocean View		6.00–10.00
78	President		12.00–20.00
49	River Edge		8.00
11	Sahara	8.00	10.00–12.00
5	St. Morits		10.00–12.00
53	Saxony		12.00–14.00
68	Sea Isle	6.00	8.00–12.00
8	Seaside	10.00	12.00–16.00
71	Seville	10.00	12.00–16.00
38	Sorrento	8.00–10.00	12.00–16.00
73	Strand of Atlantic City	6.00– 9.00	9.00–12.00
74	†Sun 'n Sand		12.00
19	Tides	10.00	12.00–14.00
72	Tropicana		10.00–12.00

Street Plan of Atlantic City Showing Location of Convention Hall and Housing Bureau Hotels and Motels



APHA HOTEL/MOTEL RESERVATION FORM

MAIL TO:

Housing Bureau
16 Central Pier
Atlantic City, N. J.

.....1959
(Date)

Please make the following reservation:

Hotel.....First Choice

Hotel.....Second Choice

Hotel.....Third Choice

..... Single Room/bath for ..... person(s). Rate $..... to $..... per room

..... Double Bedroom/bath for ..... person(s). Rate $..... to $..... per room

..... Two Rooms/1 bath for..... person(s). Rate $..... to $..... per room

Single rooms are limited; please arrange for sharing twin-bedroom if possible

Arrival..... 1959

Departure..... 1959

The names and addresses of all persons who will occupy the room(s) requested must be listed. Please be sure to indicate arrival and departure hours and dates. If you wish to cancel or make any change in your reservation, write to the Housing Bureau, and **NOT** the hotel to which you were assigned.

....
....
....
....

Name of Applicant.....

Street..... City..... Zone..... State.....

Note: You will receive confirmation direct from the hotel.

NEWS OF AFFILIATED SOCIETIES AND BRANCHES

APHA Affiliated Societies and Branches

SOCIETY AND SECRETARY

ALABAMA PUBLIC HEALTH ASSOCIATION, Ralph Roberts, State Health Dept., Montgomery
ARIZONA PUBLIC HEALTH ASSOCIATION, J. Rex James, Maricopa County Health Dept., Phoenix
ARKANSAS PUBLIC HEALTH ASSOCIATION, Mrs. Vada Russell, State Health Dept. Bldg., Little Rock
CALIFORNIA, NORTHERN, PUBLIC HEALTH ASSOCIATION, Almira Kutzer, 6 Crest Ave., Pt. Richmond
CALIFORNIA, SOUTHERN, PUBLIC HEALTH ASSOCIATION, Dorothea Hansen, City Health Dept., Los Angeles 12
COLORADO PUBLIC HEALTH ASSOCIATION, Alice de Bruyn Kops, 4660 S. Delaware, Englewood
CONNECTICUT PUBLIC HEALTH ASSOCIATION, Shirley Thayer, R.N., 61 Arnold Way, West Hartford 7
CUBAN PUBLIC HEALTH SOCIETY, Dr. Raphael Calvo Fonseca, Calle 19 No. 511 Altos Vedado, Havana
FLORIDA PUBLIC HEALTH ASSOCIATION, Nathan J. Schneider, Ph.D., P. O. Box 210, Jacksonville
GEORGIA PUBLIC HEALTH ASSOCIATION, Carl Fox, 33 Pryor St., N.E., Atlanta
HAWAII PUBLIC HEALTH ASSOCIATION, Alison MacBride, R.N., 510 S. Beretania St., Honolulu 13
IDAHO PUBLIC HEALTH ASSOCIATION, Charles Hammond, P. O. Box 640, Boise
ILLINOIS PUBLIC HEALTH ASSOCIATION, William J. Hixon, Evanston Health Dept., Evanston
INDIANA PUBLIC HEALTH ASSOCIATION, Gale E. Coons, State Board of Health, Indianapolis
IOWA PUBLIC HEALTH ASSOCIATION, Lloyd Coe, Iowa Hospital Association, 1012 Liberty Bldg., Des Moines
KANSAS PUBLIC HEALTH ASSOCIATION, W. W. Wilmore, Kansas Tuberculosis and Health Assn., 1134 Topeka Ave., Topeka
KENTUCKY PUBLIC HEALTH ASSOCIATION, Peggy Fisher, 620 S. Third St., Louisville 2
LOUISIANA PUBLIC HEALTH ASSOCIATION, Lucille Godelfer, State Dept. of Health, New Orleans 7
MARYLAND PUBLIC HEALTH ASSOCIATION, Lillian B. Davis, Sc.D., Department of Education, Baltimore
MASSACHUSETTS PUBLIC HEALTH ASSOCIATION, Mrs. Elizabeth K. Case, Dept. of Health, Cambridge
MICHIGAN PUBLIC HEALTH ASSOCIATION, Lansing
MINNESOTA PUBLIC HEALTH CONFERENCE, D. S. Fleming, M.D., State Dept. of Health, University Campus, Minneapolis
MISSISSIPPI PUBLIC HEALTH ASSOCIATION, H. E. Boone, P. O. Box 1700, Jackson
MISSOURI PUBLIC HEALTH ASSOCIATION, Mrs. Nadia Craver, 5th Fl., State Office Bldg., Jefferson City
MONTANA PUBLIC HEALTH ASSOCIATION, Thomas S. Willett, Montana Public Health District 1, Hardin
NEBRASKA PUBLIC HEALTH ASSOCIATION, Emily Brickley, 1004 Capitol Bldg., Lincoln
NEW MEXICO PUBLIC HEALTH ASSOCIATION, Daniel T. Marley, P. O. Box 8056, Albuquerque
NEW YORK CITY, PUBLIC HEALTH ASSOCIATION OF, Frances Ann McVey, 4317 Robinson St., Flushing 55, N. Y.
NEW YORK STATE PUBLIC HEALTH ASSOCIATION, Mrs. Kathleen Boland, Rensselaer County Health Dept., Troy
NORTH CAROLINA PUBLIC HEALTH ASSOCIATION, R. W. Brown, Bucombe County Health Dept., Asheville
NORTH DAKOTA PUBLIC HEALTH ASSOCIATION, Jean E. Norton, R.N., Box 133, Bismarck
OHIO PUBLIC HEALTH ASSOCIATION, Mrs. June O'Donnell, 3516 Braddock St., Dayton
OKLAHOMA PUBLIC HEALTH ASSOCIATION, Marjorie Butler, 3400 North Eastern, Oklahoma City
OREGON PUBLIC HEALTH ASSOCIATION, Russell E. Lee, P. O. Box 231, Portland 7
PENNSYLVANIA PUBLIC HEALTH ASSOCIATION, Emma J. Petach, R.N., 324 N. Second St., Harrisburg
PUERTO RICO PUBLIC HEALTH ASSOCIATION, Mrs. Mae de Acín, Apartado 211, San Juan 2
SOUTH CAROLINA PUBLIC HEALTH ASSOCIATION, Mrs. Laura M. DeMarse, State Health Dept., Columbia
SOUTH DAKOTA PUBLIC HEALTH ASSOCIATION, Alice Brady, R.N., State Dept. of Health, Pierre
TENNESSEE PUBLIC HEALTH ASSOCIATION, C. B. Tucker, M.D., State Dept. of Health, 420 Sixth Ave., N., Nashville
TEXAS PUBLIC HEALTH ASSOCIATION, Joseph N. Murphy, Jr., State Dept. of Health, Austin
UTAH PUBLIC HEALTH ASSOCIATION, Katherine Brandon, M.D., P. O. Box 25, Foothill Station, Salt Lake City
VIRGINIA PUBLIC HEALTH ASSOCIATION, Mrs. Helen W. Wiesmann, 1220 E. Broad St., Richmond
WASHINGTON STATE PUBLIC HEALTH ASSOCIATION, Tom Drummey, State Dept. of Health, Smith Tower, Seattle
WEST VIRGINIA PUBLIC HEALTH ASSOCIATION, Paul B. Shanks, State Health Dept., Charleston
WISCONSIN ASSOCIATION FOR PUBLIC HEALTH, Paul Weis, 1 W. Wilson St., Madison
MIDDLE STATES BRANCH, APHA, Thelma Luther, Dept., of Health, Des Moines, Iowa
SOUTHERN BRANCH, APHA, Guy Tate, Jr., Jefferson County Health Dept., Birmingham, Ala.
WESTERN BRANCH, APHA, Mrs. L. Amy Darter, c/o Executive Office, 760 Market St., San Francisco 2, Calif.

A South Carolina First in 20 Years

The 36th annual meeting of the South Carolina Public Health Association was billed ahead of time in the Charleston Evening Post as "the first time in more than 20 years that the SCPHA meeting has been visited by the parent organization's chief administrative officer." Berwyn F. Mattison, M.D., represented APHA and brought the greetings of the president and the Executive Board. The Evening Post carried his picture and that of the keynote speaker at the first general session, Edward G. McGavran, dean, School of Public Health, University of North Carolina.

Dr. McGavran's theme song was that the public health worker must remember that he treats the community as his patient in the same way that the practicing physician treats his individual patient. It behooves him, therefore, to recognize the specific problems of his own community and to apply the specific remedies. The presidential address of C. E.

Ballard, M.D., health officer of Pickens County, at the same meeting, stressed the importance both of continued education in schools of public health and of in-service training in meeting both old and new and ever-increasing problems. The education theme—this time of the public—was further carried out by John T. Cuttino, M.D., dean of the Medical College of South Carolina, who called for greater cooperation between medical schools and public health people in this education as well as in educating the doctor and the public health worker himself, "The doctor must become better aware of his community responsibility."

Speaking of the relation between private medicine and public health, J. Richard Allison, Jr., M.D., practicing physician, said that 95 per cent of medicine's fear of public health as the road to "socialized medicine," was "due to the failure or inability to see all sides of the situation." Thus "constant reappraisal" is needed "of the obligations of both the private practitioner and the public health worker."

The state's director of sanitary engineering, William T. Linton; R. M. Cooper, director of the State Development Board; and John Hash, superintendent of the E. I. duPont de Nemours & Company plant in Camden, discussed several aspects of the relationship between industry and public health, particularly in the broad field of environmental sanitation and the mutually rewarding results of cooperation. Officers elected for the coming year are:

President: Elizabeth Davis, health education consultant

President-Elect: Betty Ficquett, consultant nurse, Maternal and Child Health Division

Vice-President: Ruth P. Goettee, personnel officer

Secretary: Laura M. De Marse, Business Management Section

Treasurer: John B. Asbill, accountant, Finance Division

Representative to APHA Governing Council: G. S. T. Peeples, M.D., state health officer

Each is on the staff of the State Health Department.

Louisiana Makes Numerous Awards

More than 300 persons attended the April meeting of the Louisiana Public Health Association in Baton Rouge. The key discussions on chronic disease and aging were led by William H. Stewart, M.D., chief of the Division of Public Health Methods, PHS, who called aging both an achievement and a problem of public health. He announced a study guide in preparation by the Service that would outline pertinent and universal questions about chronic illness, suggest ways of answering them, and help in planning a study to fit the community's needs. Milton Terris, M.D., professor of epidemiology, Tulane Medical School, carried the theme further by challenging local health departments to plan for the chronically ill and aged. William Sorum, M.D., Department of Psychiatry, Tulane Medical School, stressed the importance of understanding the aged person in relation to his total situation.

The Axson-Choppin Memorial Award was presented to Bruce Everist, M.D., assistant clinical professor of medicine, Louisiana State University School of Medicine. The third annual Dr. E. B. Barton Memorial Award went to the State Health Department's nutrition consultant, Margaret C. Moore. Another 1957 innovation, the Dr. Felix Formento Award, was received by Maud Loeber, M.D., long active in child hygiene and the State Board of Health's crippled children's program. Dorothy Kennedy Maher, secretary to the state health commissioner, was presented the Dr. C. B. White Memorial Award "for meritorious, diligent, and long service to public health."

Two nurses of the New Orleans Health Department and six employees of the state department received Agnes Memorial Awards "for many years of loyal

service." The state health commissioner, William J. Rein, M.D., in behalf of the State Board of Health, pinned 20-year service pins on eight workers in state or local health departments.

Andrew Hedmeg, M.D., director of the state's Division of Local Health Services, succeeded Lucille Sawyer, supervisor of nurses in the Caddo-Shreveport Health Department, as president. Other new officers are:

Vice-Presidents: George Ineichen, chief safety consultant; E. J. Sylvester, chief survey officer

Secretary: Madge Kelly, clerk, Ouachita Parish Health Unit

Treasurer: Lucille Godelfer, laboratory technician, State Health Department

Connecticut Notes Doctor Shortage

Among the speakers at the spring meeting of the Connecticut Public Health Association on April 2 in Storrs was Robert H. Kroepsch, Ed.D., executive secretary, New England Board of Education. "The region's supply of physicians, dentists, and nurses is seriously lagging behind the explosive population boom," he said. Since 1950, while medical school enrollments have increased 13 per cent, both New England students entering medical schools have actually decreased as have Connecticut residents entering any medical schools. Among his suggested remedies is the development of a "service to humanity" spirit where "all the rewards are not reflected in the pay check." An abstract of his talk was carried in the April Bulletin of the Hartford County Medical Society.

"We must stop answering questions that no one is asking," namely, speak to people in terms related to their own experiences, was the message of David C. Philips, professor of speech and drama, University of Connecticut.

An afternoon was devoted to a panel on "The Emotional Environment of the Child—A Public Health Affair." Also on the program were the respective directors explaining several services of the State Health Department; the poison control center; the virology laboratory; and the family injury survey.

Honorary memberships in CPHA were awarded to Ann R. Winslow, board member, New Haven Visiting Nurse Association, for "her many contributions to persons, agencies and organizations related to public health and welfare"; to Benjamin N. Pennell, D.V.S., health officer of New London, for a "long and active career in public health and sanitary practice in New London County and Connecticut"; and to Walter L. Kulp, Ph.D., professor emeritus of bacteriology, University of Connecticut, for "many accomplishments which have favorably affected the health and lives of the American people, the citizens of Connecticut, students, and many associates."

Shirley A. Thayer, supervisor of the Hartford Visiting Nurse Association, was elected to fill the unexpired term of Elizabeth Louise Ratcliff, former health educator, New Haven Tuberculosis Association, who is now with the Pittsburgh Tuberculosis Association.

Arkansas 25-Year Awards to 15

Some 400 persons attended the day and a half 11th annual meeting of the Arkansas Public Health Association in Little Rock on April 29-30. Two general sessions, an afternoon of section meetings, and the annual dinner dance made up the program.

Keynote addresses at the two general sessions were made by C. Hamilton Moses of Little Rock on "Challenge of the Centuries," and by Emil Chanlett, professor of public health engineering, University of North Carolina, on "Public Health Neglect for our Productive People." Professor Chanlett was awarded an "Arkansas Traveler Certificate."

The association initiated an annual custom of awarding a walnut plaque to those with 25 years of public health serv-

ice. The 15 recipients of 1959 are thus charter members of a 25-year club.

Catherine Hidy, health educator of the Little Rock Health Department was the outgoing president. New officers are:

President: L. B. Jones, M.D., director, Phillips County Health Department

President-Elect: James H. Shelton, State Health Department

Secretary-Treasurer: Mrs. Vada Russell, State Health Department

Representative to APHA Governing Council: E. J. Easley, M.D., assistant state health officer

The 1960 meeting will be held in Little Rock, May 10-11.

50 Years of Idaho Public Health

The May 8-9 meeting of the Idaho Public Health Association in McCall celebrated two anniversaries—52 years of the State Board of Health and 20 years of Idaho Public Health Association. An interesting history of the growth of public health in Idaho was given at one session by Dr. Terrell O. Carver, Idaho administrator of health.

Kicking off the session, attended by some 200 persons, was a panel on "Mental Health Needs" which pointed out the need for more community mental health clinics and more consultant services to local officials, particularly judges who deal with adult or juvenile law violators. Further, a resolution urged the State Board of Health to promote a legislative program that would provide the necessary funds to assure accreditation of the state mental hospitals.

The chairman of the Public Health Committee of the state senate reviewed 1959 legislation bearing on health. Appropriations for the health department were 6 per cent below the absolute minimum requested by the department. An Air Pollution Control Commission was created on which the health commissioner or his designee serves. Among others was authorization for creation of mosquito abatement districts with taxing powers and adoption, as a minimum, of Public Health Service grade standards and definitions for milk and milk products and joint enforcement of health and agricultural departments.

The significance of radioactivity to public health was explained by J. W. McCaslin, a physicist from the Idaho Atomic Energy Commission reactor station, who told the group that any hazards to the human race brought about by use of radioactive materials would have to be balanced with its benefits. In a discussion of public health aspects of staphylococcal infections Harvey B. Minchew, M.D., of Johns Hopkins Hospital, explained the types of infection and the accepted methods for control in hospitals and other institutions.

Robert E. Mytinger, director of the APHA regional office, brought greetings from the president and executive director and described some of the services available through the regional office.

One resolution calls for rotating Idaho Public Health Association's annual meeting among several of the state's larger cities. Another urges that an L. J. Peterson Memorial Lecture be established as a function of the annual meeting.

Retiring president was Leslie T. McCarthy of the State Bar Association, and retiring secretary, Wesley O. Young, D.M.D., chief of the Dental Health Section, State Health Department. The newly elected officers reported are:

President: H. Grant Gardner, state representative

Secretary: Charles Hammond, Boise

Treasurer: Dorothy Campbell, St. Lukes Hospital, Boise

MPHA Scans Local Health Services

The spring and annual meeting of the Massachusetts Public Health Association was held in Cambridge on April 30. Here there were a number of interesting panels. "Ramblings Phenomenal on

Rumblings Abdominal" was a "Whodunit" investigation of a surprising foodborne outbreak in which the discussants followed step-by-step the story of an outbreak in terms of case history, field investigation, and laboratory findings.

Three informal discussion groups of some 20 persons each tried to pin down what should be happening in local health departments during the next decade. Regionalization through district organization or union health departments, closer relation of health departments to other community organizations, and the newer health programs and a look at the traditional ones were on the discussion list.

Two other panels discussed the better integration of mental health in public health programs. "Fluoridation as a Community Issue" brought out behavior differences between communities accepting and those rejecting water fluoridation.

At the dinner meeting presided over by retiring president Franz Goldmann, M.D., the annual Shattuck Award was presented to Ida B. Cannon, retired, for her pioneering development of medical social service in the Massachusetts General Hospital.

The April issue of the association's "Proceedings" appeared in time for the meeting. It summarized many of the year's activities—a growth of 20 per cent in membership; three meetings during the year under the program chairmanship of Leon Sternfeld, M.D., supporting good public health practice in supporting the governor in appointing a professionally qualified state health commissioner and in supporting the policy of free polio vaccination for pregnant women and for children under six; the creation of a legislative committee whose members include representatives from related professional organizations. "Proceedings" is edited by Kenneth E. I. MacLeod, M.D., Worcester health commissioner. The new officers are:

President: Dean Clark, M.D., director, Massachusetts General Hospital
President-Elect: Leon Sternfeld, M.D., health commissioner, Cambridge
Vice-President: William H. Weidman, M.D.
Recording Secretary: Janet E. Packard, nutritionist, Beth Israel Hospital, Boston
Treasurer: Jack Kasten, assistant director, Jewish Hospital, Roxbury

Elizabeth K. Caso continues as executive secretary.

A New Jersey Affiliate

Two resolutions resulted from the Joint Meeting on May 8, 1959, of the Council for Local Public Health Services of New Jersey and the New Jersey Health and Sanitary Association. One resolution advocated the merging of the two organizations into a single state public health society. The second called for the merged body to apply for affiliation with the APHA. The new affiliate would probably have a longer history than any other, the New Jersey Health and Sanitary Association having been organized in 1875.

Several members of both organizations were appointed a committee to study the necessary changes in the Constitutions and By-Laws. Final action will be taken at the early October annual meeting of the New Jersey Health and Sanitary Association. Meanwhile, the members of the two associations may consider themselves members "in spirit" of one public health association.

During the afternoon session, Frank J. Osborne, health officer of Orange, briefed the audience on the preparation of the "Minimum Standards for Local Health Departments in New Jersey." Daniel Bergsma, M.D., state commissioner of health, discussed the future of those standards.

V. Terrell Davis, M.D., director, Division of Mental Health, New Jersey Department of Institutions and Agencies, stressed the increasing importance of the mental hospital using the health re-

sources of the community. He was followed by Ruth Simonson, mental health nurse consultant, New York Regional Office of the Public Health Service, who told of new opportunities for the public health nurse in mental health, based on experience in the 11-state region. Alma Seber, chief public health nurse, Northern New Jersey Health District, concentrated on the accomplishments of the public health nurse in the mental health programs of New Jersey.

It was announced at this meeting that these two organizations and the New Jersey Health Officers Association will be hosts at a dance on Monday evening, October 19, 1959, to which everyone attending the APHA Atlantic City Annual Meeting is to be invited.

(Courtesy inclusion in this section.)

American Public Health Association membership application blank on page XXXI

Excellent Medical Reporting Award

On behalf of the New York State Health Department, an "Empire State Award for Excellence in Medical Reporting" has been established by the New York State Medical Society and the Annual Public Health Conference. The first biennial award of $500 and a certificate, together with a certificate for the recipient's newspaper will be made at the 1960 meeting of the conference in New York City.

The five-man panel of judges includes a designee each of the state health commissioner, the State Society of Newspaper Editors, and the National Association of Science Writers, as well as the chairman of the Committee on Public Relations of the State Medical Society, and a representative of the Annual Health Conference.

Any editorial staff member of any newspaper published in the state five or more times a week is eligible. He may be nominated for a single article or a series. The judges will also consider his general medical or health stories written during the year.

"The award will serve to recognize the significant contribution to public knowledge and understanding of health and medicine—made by reporters and their newspapers," said Health Commissioner Herman E. Hilleboe, in announcing the award.

EMPLOYMENT SERVICE

Annual Meeting Employment Service

An employment center will be located in the exhibit area at the 87th Annual Meeting. See the official program at the meeting for exact location. The service will be sponsored by the New Jersey State Employment Service with the assistance of the Massachusetts, New York, and Pennsylvania State, and the District of Columbia Employment Services, all affiliated with the U. S. Employment Service, and the Association. Professional personnel will be available to assist employers and employees. Vocational counseling will also be available. Binders containing copies of applications and position descriptions will be available for inspection by applicants and employers who have registered with the service.

Employers and candidates are urged to file beforehand. This should be done through either your local state employment service office or the Association. The required forms will be available at both places. Filing by October 2 is necessary if records are to be forwarded to the meeting. It will be possible to register at the meeting also.

A conference room will be available at the center for use by employers and applicants. Early registration will facilitate appointment arrangements.

The following pages present information for those seeking public health personnel and for those seeking positions in public health. Other information concerning vacancies and personnel available is on file in the Association office. Anyone wishing to have the benefit of this additional information can obtain it by writing to the Vocational Counseling and Placement Service of the Association.

Advertising space in these pages is available at special rates for the use of employers or individuals. The charges are $5 for the first 50 words or fraction thereof and $1 for each additional 10 words or fraction thereof. There is no charge to members or Fellows of the Association who desire to utilize the **Positions Wanted** portion of these pages. **Closing date** for receipt of advertisements is the first of the month preceding the desired month of publication. **All correspondence should be sent to the American Public Health Association, 1790 Broadway, New York 19, N. Y.**

POSITIONS AVAILABLE

Physician—to serve as head of department of health clinical team working with children having a variety of crippling conditions. Will have professional and administrative responsibility for operation of specified areas of crippled children services. Requires completion of general internship in approved hospital and not less than two years' employment in pediatrics or completion of two-year internship in pediatrics and M.P.H. Citizenship required; also eligibility for license to practice medicine and surgery in Connecticut. Merit system, liberal fringe benefits, including retirement and Social Security. Reply to George J. Walker, Personnel Director, State Office Bldg., Hartford, Conn.

Medical Health Officer—for Las Animas-Huerfano Health Department offices in Trinidad, Colo. This is an established unit with qualified personnel. Salary starts at $11,000. Address inquiries to Dalton Roberts, Chief, Administrative Services, Colorado State Department of Public Health, 420 State Office Bldg., Denver 2, Colo.

Public Health Officer—Wanted for well established local health department. M.P.H. required. Salary $12,000, plus travel, retirement, vacation, and sick leave. Lee County Health Department, Dixon, Ill.

Medical Health Officer—for Jackson County, Ill. Established county health department in southern Illinois just 90 miles from St. Louis, Mo. Southern Illinois University located within county. Excellent fishing, hunting, and recreation at nearby Crab Orchard Lake. Air-conditioned building, liberal vacation, sick leave, and Social Security, supplemented by state retirement benefits. Salary range $9,600-$18,000 for physician with public health training and experience. Contact Mr. E. A. Kraft, President, Jackson County Board of Health, 1015½ Chestnut St., Murphysboro, Ill.

—THE PUBLIC'S HEALTH—

is your concern abroad as well as at home.

If you are a physician, nurse, or sanitary engineer educated, trained, and experienced in public health, the U. S. Point Four programs need your services. Pay is commensurate with your experience and education. Posts are in the challenging underdeveloped areas of the world.

Send your curricula vitae to the Public Health Division, Box PH-2, International Cooperation Administration, Washington 25, D. C.

Public School Physician—Full-time medical officer for public schools, Ithaca, N. Y. Twelve-month contract, including one month's summer vacation, plus regular school vacations. Opportunity to supplement income as summer camp medical consultant. Salary commensurate with experience. Advantages of educational center. Please write promptly to Superintendent of Schools, Ithaca, N. Y.

Medical Officer (Medical Education and Training)—The World Health Organization invites applications, which should be made within six weeks of the date of issue of this advertisement, for the post of medical officer (medical education and training) at its headquarters in Geneva. Applicants must have a postgraduate qualification in medicine and have had substantial experience in its practice. A postgraduate qualification in public health is desirable. Experience in professional medical education and especially in literary work are important additional qualifications. The salary scale is $8,750 (U. S.), rising by annual increments to $11,000 per annum, plus certain allowances. Further information regarding the duties of the post, terms of service, and application forms can be obtained by writing to the Chief of Personnel, World Health Organization, Palais des Nations, Geneva, Switzerland, and marking the outside of the envelope "V.N.474." Applications by letter in the first instance, giving brief details of the qualifications and experience. Only candidates who seem suitable will receive a reply. Those who applied in response to our advertisement for the post of Regional Adviser in Education and Training in Alexandria need not apply.

Assistant Public Health Director—for Arlington County, Va. Entrance salary $10,500 a year. United States citizenship and eligibility for a license to practice medicine in Virginia required. Training or experience in public health administration desirable. Age to 50. Apply Arlington County Personnel Department, Court House, Arlington, Va.

Director, Local Health Services—Wisconsin. Work with the state health officer and professional staff in improvement of local health services. M.P.H. degree and eligibility for license to practice medicine in Wisconsin required. Salary $1,012-$1,247, commensurate with experience. Write E. H. Jorris, M.D., Assistant State Health Officer, 400 State Office Bldg., Madison 2, Wis.

Public Health Dentist (Director, Dental Health Education)—Wisconsin State Board of Health, Madison. Duties: under administrative direction, plan and direct a state-wide program of dental health education; responsible for planning and directing a statewide program designed to reduce the incidence of dental caries through the application of modern public health dental practices. Desirable qualifications and experience: M.P.H. degree, plus three years' experience in public health dentistry; eligibility for a license to practice dentistry in Wisconsin. Salary $907-$1,127 per month. Civil service, vacation, sick leave, Social Security, retirement benefits, group insurance. Write E. H. Jorris, M.D., Assistant State Health Officer, One West Wilson St., Madison 2, Wis.

Public Health Nursing Supervisor—Salary $491-$614; one-step increase after six months. Generalized health department program. Responsibility at state college in basic nursing program. Twelve staff public health nurses. Apply to Virginia Nelson, Director of Public Health Nursing, Humboldt-Del Norte County Health Department, P. O. Box 857, Eureka, Calif.

Public Health Nurses—$395-$489. Close to beach and recreational areas; three weeks' vacation, 11 holidays. Requires eligibility for California nurse's registration, California public health nurse certificate, and California driver's license. Apply Orange County Personnel Department, 801-C N. Broadway, Santa Ana, Calif.

Public Health Nurse—Immediate opening in eastern Idaho near Yellowstone Park, Teton Mountains, and Jackson Hole, Wyo. Large recreational area nearby with boating, waterskiing, etc. Opportunity for program development in an urban-rural area. Close to a college. Beginning salary is $340 a month for a public health nurse with a college degree or one academic year of public health nursing background. Address inquiries to Dr. Terrell O. Carver, Administrator of Health, State House, Boise, Idaho.

Public Health Nurses—with beginning salaries of $4,160, $4,550, $4,888, depending on qualifications, with merit increases, longev-

ity rates, liberal sick and retirement benefits. New air-conditioned building. Contact Flint Civil Service Commission, Municipal Center, Flint 2, Mich.

Engineer—Public health experience desirable but not required. County health department in rapidly growing Chicago suburbs. Starting salary to $6,000, plus car allowance. Excellent retirement plan, Blue Cross, three weeks' vacation. DuPage County Health Department, 209 E. Liberty Dr., Wheaton, Ill.

Senior Public Health Engineer—to assume full charge of environmental sanitation program, county unit. Requirements: state professional engineering license or eligibility, academic degree in sanitary engineering, two to five years of experience, according to educational qualifications. Salary $8,000. Write Columbia County Department of Health, 363 Allen St., Hudson, N. Y.

Sanitary Engineer—to direct division of sanitation with generalized program in well established county health department. Population 82,000. Liberal vacation, sick leave, retirement, longevity benefits. Salary $6,564-$7,620. Cattaraugus County Health Department, 302 Laurens St., Olean, N. Y.

Chief Industrial Hygiene Engineer—Salary range $6,900-$8,580. At least five years' experience in supervisory or advanced technical assignments in industrial hygiene engineering. College degree with major in engineering, supplemented by a master's degree in industrial hygiene engineering. Social Security, plus state retirement coverage. Write to Alfred T. Johnson, Personnel Director, Oregon State Board of Health, P. O. Box 231, Portland 7, Ore.

Registered Sanitarian—Butte County, Calif. Salary $391-$486. Beginning salary can be $436 based on qualifications and experience. Requires valid registered sanitarian certificate in the state of California. For further information contact Arnold W. Brockmole, M.D., Director, Butte County Health Department, P. O. Box 1100, Chico, Calif.

Biostatistician—for appointment in department of preventive medicine in a medical school. Responsibilities include teaching and research design, both to basic science and clinical departments. **Box ST-20,** Employment Service, APHA.

Health Educator—for the Colorado State Health Department offices in Denver, Colo. Position under merit system. Salary starts at $442, with maximum of $572 per month. Write to Dalton Roberts, Chief, Administrative Services, Colorado State Department of Public Health, 420 State Office Bldg., Denver 2, Colo.

Health Educator—to render consultant services in programs and projects of the Pan American Sanitary Bureau/World Health Organization with assignment to a Latin American country and travel to neighboring countries. Minimum requirements: master of public health degree from a recognized school of public health with considerable field as well as supervisory experience in public health education. Fluency in Spanish or French required. Attractive salary and allowances. For further details write to Personnel Officer, PASB/WHO, 1501 New Hampshire Ave., N.W., Washington 6, D. C.

Public Health Microbiologist—$417-$516. To work in modern laboratory. Liberal benefits. Three weeks' vacation. Requires California public health microbiologist certificate and dairy bacteriologist certificate. Apply Orange County Personnel Office, 801-C N. Broadway, Santa Ana, Calif.

Hospital Microbiologist—Male or female positions open in division of microbiology, department of pathology, of large, newly built, air-conditioned medical center in Baltimore, Md. Duties: diagnostic bacteriology. Requirements: M.S., B.S., or A.B. degree in bacteriology or biology. Starting salary with experience, $4,940 and up; without experience, $4,160 and up, depending on qualifications. Annual increments, vacation, sick leave, pension plan, insurance, 40-hour week, no nights or holidays. Address inquiries to Sinai Hospital Personnel Department, 1714 E. Monument St., Baltimore 5, Md.

Medical Social Consultants—Two positions in comprehensive programs of maternal and child health and crippled children. Connecticut State Department of Health. (1) Consultation with some direct casework in a geographical area. (2) Mental retardation clinic and program in New Haven. Graduate training with two years' experience required. Salary range from $5,100-$5,820. Write Louis Spekter, M.D., Director, Bureau of Maternal and Child Hygiene, Connecticut State Department of Health, Hartford 15, Conn.

Public Health Nursing Consultant (Assistant to Director of Public Health Nursing in State Health Department)—Give consultation to public health personnel in all phases of public health nursing, including in-service education; prepare manuals, guides, etc., for public health nurses; assist in administration of program. Bachelor's degree in public health nursing minimum preparation; master's degree desirable; four years' experience in public health nursing, including two in administration or supervision. Salary: start at $6,744, maximum $8,064. Civil service, vacation, sick leave, Social Security, and retirement benefits. Write Miss Ione M. Rowley, R.N., Director, Public Health Nursing, 119 Monona Ave., Madison 3, Wis.

Public Health Nurse, Staff Duty—for family-centered program in a university community. Salary range $4,200-$6,000. Liberal personnel policies. Retirement plan and Social Security. L. L. Fatherree, M.D., Public Health Director, Champaign-Urbana Public Health District, Champaign, Ill.

Veterinarian—$626-$720. M.P.H. and two years' experience in public health work. Develop and direct state department of health veterinary program. Arizona Merit System, 11 North 17th Ave., Phoenix, Ariz.

Dentist—$626-$720. One year of graduate study in public health and three years of private practice. Develop and direct state department of health dental program. Arizona Merit System, 11 North 17th Ave., Phoenix, Ariz.

Public Health Nurse—for county health department in community offering pleasant living within two-hour drive of San Francisco Bay Area, mountain resorts, ocean beaches. Generalized program. Car furnished. Five-day, 40-hour week, three weeks' vacation, 11 paid holidays, paid sick leave, retirement, and Social Security plans. Good working conditions. Requires California P.H.N. registration or eligibility. Start $395-$481, depending on qualifications. Contact R. S. Westphal, M.D., Stanislaus County Health Department, P. O. Box 1607, Modesto, Calif.

Public Health Nursing Positions—Available in combination health department and visiting nurse service. Public health nursing preparation required. Generalized service. Agency in a university community. Beginning salary $4,468-$4,914, depending on education and experience. Social Security. Please write Miss Patricia Walsh, Nursing Director, Washtenaw County Health Department, County Bldg., Ann Arbor, Mich.

Health Educator—Progressive health department in rural area. Work in all phases of health education, plus administration. Salary $5,076-$5,784; hospitalization and retirement plans; liberal vacation and sick leave; car furnished for official business. Qualifications: M.P.H. or M.S.P.H., plus experience. Write Ian D. McLaren, M.D., Commissioner, Cattaraugus County Health Department, Box 573, Olean, N. Y.

POSITIONS WANTED

On Box Numbers, Address APHA at 1790 Broadway, New York 19, N. Y.

Public Health Veterinarian—D.V.M. (Toronto), M.P.H. (Harvard). Fourteen years' experience in veterinary medicine, plus seven years in veterinary public health. Desire position of responsibility. **Box V-23,** Employment Service, APHA.

Community Organization/Planning Specialist—Graduate degrees in health, education, and welfare. Ed.D. from Columbia University with a major in behavioral sciences. F.A.P.H.A. Wide range of experience in public health and social work. Prefer a position with an agency developing a progressive community-centered approach to health needs and problems. Especially interested in part-time teaching affiliation. **Box C-47,** Employment Service, APHA.

Public Health Adviser or Administrator—M.P.H., administration; B.S., public health sciences; B.S., business administration. Eleven years' experience in responsible public health positions. Scientific and practical knowledge of administrative theory, public relations, and community organization. **Box C-39,** Employment Service, APHA.

BOOK REVIEWS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

INTERNATIONAL STANDARDS FOR DRINKING WATER—World Health Organization. New York, N. Y.: Columbia University Press (2960 Broadway), 1958. 152 pp. Price, $4.00.

This first volume presents "standards" or suggested criteria of water quality that are applicable whatever the original source of water or the method of treatment. Equally important are the recommended laboratory methods for the examination of water that are being proposed as "approved" methods.

The material in this publication has been prepared by several study groups of experts in sanitation and water treatment under the sponsorship of the World Health Organization. It has been divided into four main parts, dealing with the bacteriological, chemical, physical, biological, and radiological requirements deemed necessary for the improvement of the water treatment and quality in the member states of the World Health Organization. The methods for chemical analyses were selected chiefly on the basis of sensitivity, accuracy, and precision with only one method having been recommended for each chemical constituent. In almost every instance either colorimetric or gravimetric methods have been recommended. The only exceptions were for the determination of pH and orthophosphate where instrumental methods were described. Since F. W. Gilcreas, chairman of the American Public Health Association Committee on Standard Methods for the Examination of Water and Sewage, was editor of "International Standards" it is not surprising to find many of the methods from the tenth edition of "Standard Methods for the Examination of Water, Sewage, and Industrial Wastes" included in the WHO manual.

Considerable improvement in water quality can be achieved throughout the countries of the world if uniform methods for the examination of water and for the expression of the results of such examinations are adopted. It is believed that the proposed recommendations will help to fill this need and that this manual, or its equivalent, should be made available to every laboratory concerned with providing a safe and potable water supply.

ALVIN R. JACOBSON

ROLE RELATIONS IN THE MENTAL HEALTH PROFESSIONS—By Alvin Zander; Arthur R. Cohen; and Ezra Stotland. Ann Arbor, Mich.: Research Center for Group Dynamics, Institute for Social Research, University of Michigan, 1957. 210 pp. Price, $4.50.

Many voices have been raised in recent years to emphasize the importance of cooperation among the health professions. Yet, as we are aware, such cooperation is easy to achieve in some instances and very difficult in others. Why is this so? Some light is thrown on the problem by the study under review. It is an investigation of the beliefs held by psychiatrists, clinical psychologists, and psychiatric social workers about each other and the way in which they participate together in handling mutual problems. These data were obtained by means of individual interviews with 156 psychiatrists, 165 clinical psychologists, and 159 psychiatric social workers. The respondents worked in large metropolitan areas and had numerous opportunities for interaction with members of the other two professions. The study is well organized and well reported.

As one might expect, the psychiatrist sees the members of the other two professions as ancillary to his role and work. At the same time, a majority of the psychologists feel they are equal to or more competent than the psychiatrist. The same feeling is expressed more strongly with regard to the psychiatric social worker. On the other hand, the latter holds equally strong beliefs about the clinical psychologist. The study also deals with each group's conception of the amount of power it has to influence the others, the degree of acceptance, of power positions, and related problems.

It is not possible to pursue the details of this study further, but it should be read by health administrators and other health workers who have to deal with several interrelated professional groups. This problem is likely to loom larger as more and more groups in the health field strive to become professionalized.

GEORGE ROSEN

THE FAMILY MEDICAL ENCYCLOPEDIA—By Justus J. Schifferes. Boston, Mass.: Little, Brown (34 Beacon St.), 1959. 617 pp. Price, $4.95.

This book is obviously designed and put into type with a view to transformation into a paperback to sell around 50 cents. The type is small, the page size is small, and the book represents economy in production from every point of view except in excessive wordage.

Most of what he says is accurate and dependable. If the Advisory Board really advised, and we are assured that Dr. Austin Smith read the galleys in toto, they must bear most of the responsibility.

The book is unusual in such productions in the articles on health insurance, the family doctor, and similar topics which are socioeconomic in their approach to medical problems. These are offered as primarily informational rather than argumentative.

As to excessive wordage, I note the article on stomach trouble. Here are some quotes:

"How common is peptic ulcer? Very common."

"What provokes a peptic ulcer? The cause, or causes, of peptic ulcer are not really known."

"What are the symptoms of peptic ulcer? They are strange and varied. Sometimes there are no symptoms . . ."

As the reviewer of this book, I should call attention to the fact that I am myself the author of several similar books and that within recent years at least four others have appeared with somewhat a deplorable lack of acceptance by the public for whom they are apparently intended. Just why people buy one of these books rather than another, I have not yet determined. Obviously this book gives much useful information and should be worth the price to anyone who wants just this type of book.

Because of the nature of its typographical production and the clear indication in the preface that it is to be prepared for Pocket Books, Inc., in the interest of economy I can only suggest to prospective purchasers that they wait for the paperback edition which should be available almost simultaneously with the more expensively covered item.

MORRIS FISHBEIN

ELEMENTS OF WATER SUPPLY AND WASTE-WATER DISPOSAL—By Gordon Maskew Fair and John Charles Geyer. New York, N. Y.: Wiley (440 Fourth Ave.), 1958. 615 pp. Price, $8.95.

This book is directed to undergraduate students of civil and sanitary engineering. As a textbook it will prove most valuable if, as the preface suggests, it is supplemented by visits to and lantern slides of existing municipal and industrial works, especially works under construction; examination of plans and specifications of such works; and assignments of readings from the bibliography.

The first half of the book deals with the collection and distribution of water and the collection and removal of waste water. The second half deals with natural waters and the treatment of water and waste water. The form of this book is similar to its larger prototype "Water Supply and Waste-Water Disposal," (published in 1954). Instead of water supply and waste-water disposal being considered as separate subjects, they are considered jointly.

The subject matter of this new volume has been simplified and shortened. The authors discuss principles rather than practice. In general, the entire field is well covered. The writing is clear and concise. New material has been added on flocculation, sand filtration, chlorination, oxidation ponds and sewage lagoons and water quality criteria. The discussion of radioactive materials and radioactive wastes is sketchy. The book is also sketchy in its discussion of the wastes resulting from synthetic detergents, toxic chemicals, and the by-products of the chemical industry.

In addition to its value for undergraduate students, this book will serve well as a general reference for practicing engineers and governmental officials.

E. A. REINKE

SERVICES FOR CHILDREN WITH EPILEPSY—By the Committee on Child Health, American Public Health Association. New York, N. Y.: The Association (1790 Broadway), 1958. 124 pp. Price, $1.50.

This is the seventh guide to be published in a projected series of ten dealing with services for handicapped children. The first half discusses briefly but adequately what epilepsy is, causes and prevention, case finding (including estimates, crude as these might be presently, of incidence and prevalence), diagnostic evaluation, treatment, and management. The latter half of the volume is devoted to means whereby the community can mobilize and organize its resources in order to provide services, both basic and special, for epilepsy patients and their families, and to engage in the much-needed training of personnel and research in the field of convulsive disorders. A word of praise is in order for the appendixes dealing with medical classifications, drug treatment, suggested qualifications for selected professional personnel, existing voluntary and professional organizations concerned with children with epilepsy, and a selected list of films on epilepsy. The selected bibliography lists ten books (none published prior to 1946), and 76 articles and pamphlets, the majority published since 1953. More mention of the behavioral scientist would have been justified in view of the emphasis throughout the volume on the sociocultural lag that exists at present between the technological progress in epilipsy and the legal restrictions in marriage, employment, motor vehicle operation, etc. Also, it might have been useful, even if somewhat obvious, to indicate that community services for persons with epilepsy can include persons with other handicapping conditions, specifically cerebral palsy and mental subnormality. This guide should be used by personnel in public health, education, social welfare, rehabilitation, personnel management, law, and medicine.

LEON STERNFELD

ESSENTIALS OF THERAPEUTIC NUTRITION—By Solomon Garb. New York, N. Y.: Springer (44 East 23rd St.), 1958. 147 pp. Price, $2.00.

The author of this book is associate professor of pharmacology at Albany Medical College. The book was suggested by courses he taught to graduate nurses. Major objectives were to increase interest of nurses in nutrition teaching by relating facts to patient needs. This emphasis is consistently maintained.

The book is divided in three parts. Part I summarizes dietary essentials in

food, dietary deficiencies, nutritional needs throughout life, and diseases and complications provoked by the normal diet such as phenylketonuria and galactosuria. The chapter on effects of medication on nutrition is particularly interesting.

The 1953 "Recommended Allowances" rather than the 1958 ones were used. Therefore, some statements are not the latest available data.

Part II, entitled "Therapeutic Diets," is a compilation of regular and 30 modified hospital diets. The latter were compiled from lists secured from many leading hospitals. Each diet is briefly described under these headings: purpose, analysis, meal plan, deficiencies, foods to be increased, eliminated or reduced, and comments. These dietary summaries should aid nurses in interpreting diets to patients.

Documentation on sources of the various plans would have been helpful. No reference is made to the three low sodium diets recently issued by the American Heart Association.

Part III consists of 18 reference tables on general food values per 100 gm, on oral supplements, foods high and low in protein, fat, sodium, and other essentials. While helpful for quick reference, data in this section and some in Part I are not all complete, nor are they all universally accepted.

ANNA DE PLANTER BOWES

MODERN CHEMOTHERAPY OF TUBERCULOSIS—ANTIBOTICS MONOGRAPHS NO. 11—Edited by Henry Welch and Felix Marti-Ibañez. New York, N. Y.: Medical Encyclopedia (30 East 60th St.), 1958. 109 pp. Price, $4.00.

This monograph, comprising 80 pages of text, is a scholarly treatise on the treatment of tuberculosis written by two eminently qualified experts. The massive bibliography of 510 references testifies to the scope of the material presented.

For the most part the book deals with the chemotherapy of tuberculosis with the three main antimicrobials in use today, isoniazid, streptomycin, and p-aminosalicylic acid. However, there are excellent short sections on the minor chemotherapeutic agents and also on other forms of treatment, such as rest, excisional surgery, and collapse.

Because the subject is limited, the authors are able to cover it in a comprehensive manner in this short text. Some of the discussions dealing with chemistry will not be readily absorbed in detail by the average physician. However, the book is so written that readers may concentrate profitably on the more technical problems or may interest themselves in the practical aspects which are presented in concise and understandable language. There are excellent summary tables which condense the current consensus on such subjects as drug regimens, duration of therapy, drug toxicity, susceptibility of organisms to antimicrobials, and indications for chemotherapy.

This volume should be required reading for research workers interested in tuberculosis and for phthisiologists. It should be in the reference library of any physician who treats tuberculous patients.

JOSEPH B. STOCKLEN

LABORATORY METHODS—By the Air Pollution Control District, County of Los Angeles. Los Angeles, Calif.: Air Pollution Control District (434 S. San Pedro St.), 1958. Price, $12.50; individual methods, $1.00.

This volume, in loose-leaf format, presents a compilation of laboratory methods for use in investigations of air pollution problems. Prepared primarily for the use of the Air Pollution Control District's laboratories, it contains detailed procedures which these laboratories have studied and found to be applicable and satisfactory for the specific determinations employed in air monitoring and testing. The application and

scope of each method is given and also its sensitivity in detecting the particular air pollutant. No information is included relative to the accuracy of a given technic nor the reproducibility of results from repetitive tests.

Excellent illustrations of specialized equipment are included where pertinent. All of the methods are based on the use of instrumentation for the determination of the concentration of the substance under analysis. Thus these methods will find direct use only in laboratories equipped with these instruments. The inclusion of alternative procedures not based on instrumental technics would enhance the value of this volume to other laboratories concerned with air pollution investigations. The book is well bound in a vinyl cover which permits ready cleaning and its loose-leaf format allows insertion of additional pages when new or modified technics are prepared. The district contemplates providing at a nominal price individual methods as such are developed. F. W. GILCREAS

THE FAMILY AND POPULATION CONTROL. A Puerto Rican Experiment in Social Change—By Reuben Hill; J. Mayone Stycos; and Kurt W. Back. Chapel Hill, N. C.: University of North Carolina Press. 481 pp. Price, $8.00.

"Population explosion" has become acknowledged as a major deterrent to socioeconomic progress of modernizing countries such as India. The title evokes the curiosity of administrators as to whether the book provides the solution to a growing international problem. A generalized answer must be in the negative.

The book is a report of an intensive social survey, in the words of the authors, "to ascertain why in Puerto Rico the expected equalization of birth rates and death rates has not occurred." Without doubt the study will receive wide acknowledgment as an excellent example of how social studies of population problems should be approached and designed.

The concluding chapter is of interest to administrators concerned with solving the problem of fertility control. The authors enumerate principles believed to be learned from the study, which are grouped under "three pragammatic tasks: (1) Laying the Groundwork for Family Action; (2) Precipitating the Action; and (3) Insuring Perseverance of the Action." These principles are then discussed as to their implementation in Puerto Rico through three Commonwealth and one voluntary agencies. The generalization of the international inapplicability of the proposed program arose from the specific action suggestions listed by the authors. Their undertaking would be beyond the present economic capability of India. Japan's increasingly successful program is differently organized. JOHN B. GRANT

HEALTH EDUCATION IN THE ELEMENTARY SCHOOL—By Carl E. Willgoose. Philadelphia, Pa.: Saunders (West Washington Sq.), 1959. 450 pp. Price, $5.25.

This excellent text deals primarily with health education, as its title implies, rather than with the over-all school health program, as is the case with several other texts which use health education incorrectly in the title. The book is designed to furnish the elementary school teacher with a quantity of orderly and practical information for planning, carrying out, and appraising health teaching.

The author views the goals of health education to be to improve both health status and health behavior. Three chapters deal with the general topic of the elementary school health program, including school health services and healthful instruction curriculum for the kindergarten, primary grades, and intermediate grades. For each of these three levels, a total of ten categories or topics

are covered, namely, (1) personal cleanliness and appearance, (2) activity, sleep, rest, and relaxation, (3) nutrition (including alcohol and tobacco), (4) dental health, (5) body structure and operation, (6) prevention and control of disease, (7) safety and first aid, (8) mental-emotional health, (9) family life education (including sex education), and (10) community health. Methods and materials are given extensive consideration. Also included are chapters on sources of free and inexpensive teaching aids and evaluation procedures in health education.

This sound, thorough, and readable text should also be of help to health educators, school dental hygienists, and school nurses.

H. FREDERICK KILANDER

MEN, MOLDS, AND HISTORY—By Felix Marti-Ibañez. New York, N. Y.: MD Publications (30 East 60th St.), 1958. 114 pp. Price, $3.00.

Dr. Marti-Ibañez, editor of the monthly magazine, "MD," has issued a collection of several statements and addresses of his own on antibiotics and other matters.

Five chapters are addresses given at the annual Symposia on Antibiotics, held in Washington, D. C., from 1953 to 1957. Four are reprinted from "Antibiotics and Chemotherapy" of which the author is international editor), and one from "Antibiotic Medicine and Clinical Therapy." One is from a volume in Spanish on antibiotics. Another is from the "International Record of Medicine," of which Dr. Ibañez is editor-in-chief, and one from "General Practice Clinics." There are also appreciations of Dr. Henry Welch, director, Division of Antibiotics, Food and Drug Administration, Washington, D. C., and an obituary tribute to Sir Alexander Fleming, discoverer of penicillin. Finally, "Medical Communication" is dealt with in its historical and sociological perspective and in the last chapter the "Art of Translation" is discussed.

The historical, philosophical, medical, and social place of antibiotics are discussed. Their history is traced from empirical folk medicine origins which, Dr. Ibañez believes, included the "yeast of sweet beer" of the Ebers papyrus, the Chinese use of soy-flour poultices, and the Mayan Indians use of green molds (penicillia). He explains why medical theory in earlier centuries made it almost impossible to develop the antibiotics more highly at an earlier date.

The author makes repeated strong pleas to the pharmaceutical industry to establish chairs of antibiotic medicine and an international institute of antibiotics which also would have an antibiotic collection and a museum of antibiotics history.

There is a limited bibliography and also an index. The volume is well printed and is designed in good taste.

LESLIE A. FALK

HUMAN POTENTIALITIES—By Gardner Murphy. New York, N. Y.: Basic Books (59 Fourth Ave.), 1958. 340 pp. Price, $6.00.

The enormous knowledge of psychology and of such related fields as literature and philosophy which distinguished many of the author's previous studies provide the backdrop for his new book. "Human Potentialities" is an exciting scrutiny of some possible directions in which man can go.

Murphy presents evidence to show that man's ability to control his environment has progressed to the point at which it is within his power to achieve major changes. This book is an affirmation, via a closely reasoned argument, of the values inherent in being a human being and of how some of these major changes might affect these values.

The book is a thoughtful and original integration of humanist thinking and scientific evidence culled from a number of different fields. It is valuable both

for heuristic reasons and as a solid contribution to a field in which fuzzy thinking has been common. There has probably never been a time in human history when the kind of surgically precise thinking and intelligent planning for the future represented by Murphy's book was as important as it is today. "Human Potentialities" carries us to the threshold of a number of possibilities which mankind can ill afford to ignore for too long. CHARLES WINICK

PREVENTIVE MEDICINE IN WORLD WAR II. VOL. IV. COMMUNICABLE DISEASES TRANSMITTED CHIEFLY THROUGH RESPIRATORY AND ALIMENTARY TRACTS—Office of the Surgeon General, Department of the Army. Washington, D. C.: U. S. Govt. Printing Office, 1958. 544 pp. Price, $5.50.

This is the first of three volumes in this series to be devoted to the communicable diseases. It is a series of reviews by distinguished and experienced authors of the Army's experience with each of those diseases believed to be transmitted through the respiratory and alimentary tracts. There is in addition an introduction on the subject of military experience with communicable disease as a whole.

The distinction of the authors (the names of at least 16 of the 21 are household words in the profession) insures that this is a stimulating, informative, and historically important volume. The individual reviews are comprehensive, but not systematic, different authors covering in different degree such topics as history of the disease prior to World War II, experience of the civilian population, diagnosis, control measures, and research developments. One does not get a clear idea as to whether some or all of these topics are omitted from certain chapters because they were considered not pertinent or because the author preferred to concentrate on areas within his personal experience.

This reviewer would have benefited greatly from an introductory chapter or two on the sources of the statistical data that are used so widely and some discussion of the attempts to solve problems, such as the estimation of "average strength" in rapid turnover camps and the selection involved in composition of the various populations compared (e.g., home and overseas forces). These and similar problems are mentioned in places, but more frequently they are ignored. There is occasional use of ratios in the text, where rates are available and would be more appropriate. However, the statistical tables themselves have obviously been prepared with care and will be of great value. They constitute a valuable reference source for the military, the microbiologist, and the epidemiologist. BRIAN MACMAHON

YOUR CHILD'S TEETH—A PATTERN FOR LIFELONG DENTAL HEALTH—By Robert J. Fanning. New York, N. Y.: Vantage Press [120 West 31st St.], 1959. 79 pp. Price, $2.95.

This book is well written. The short quotations between the first few pages are excellent and will stimulate the readers to think more about the dental welfare of their children.

After explaining in the beginning the necessity for good dental health the book goes on with "A Pattern for Lifelong Dental Health." A detailed description of tooth structure, as well as approximate formation and eruption times in the embryo through the age of 14 years is explained thoroughly. The author gives instructions to the expectant mother for the care of her own as well as her future offsprings teeth including diet.

He dispells some old "wives tales" about teeth and explains the importance of dental x-rays and periodic examinations beginning at a very early age by the dentist. He also stresses the need for cooperation between the dentist, parent, child, and teacher. He explains the proper method of brushing, the need

for filling decidous teeth, and the importance of the first molar. Thorough coverage of the cause and effect of abscessed teeth in easily understood language with good illustrations was a very satisfying thing to note. One of the later chapters is devoted to orthodontics and the author helps the parent understand future problems in this field.

The final chapter touches on the teenage teeth and the responsibility of the adolescent age groups regarding teeth. The book is one for the "must read" list for parents and would be very helpful for teachers. J. PAUL GUIDRY

SELECTED STUDIES OF MIGRATION SINCE WORLD WAR II—Proceedings of the 34th Annual Conference, October 30-31, 1957. New York, N. Y.: Milbank Memorial Fund (40 Wall St.), 1958. 244 pp. Price, $1.00.

This volume of the "Proceedings of the Thirty-fourth Annual Conference of the Milbank Memorial Fund," held in October, 1957, flows from the long-term interest of the Fund in problems of demography. It follows the 1954 Conference on Current Studies of Fertility and the 1955 Conference on Current Studies of Mortality and the hope expressed in the foreword that the publications resulting from these three conferences will constitute a valuable collection of articles on recent substantive findings and research on methods in migration, mortality, and fertility is fully justified.

In spite of the fact that the conference was primarily by and for specialists in demography, the interested nonspecialist will also find the ten papers useful reading for several purposes. Current and recent trends in both international and internal migration are summarized and discussed by various authors. Specific attention is given to internal migration in Japan and to various aspects of internal migration in the United States. The emphasis upon reports of current studies and the inclusion of brief sections of discussion of each paper provide a vivid account of several methodological problems and current areas of research. Although only one of the papers regarding migration and mental health deals specifically with a health problem, discussion of the social implications of migration occurs at several points and will be stimulating to those concerned with the health of our constantly moving populations. ROBERT REED

NUTRITION FOR PRACTICAL NURSES—By Phyllis S. Howe (2nd ed.). Philadelphia, Pa.: Saunders (East Washington Sq.), 1958. 219 pp., paper bound. Price, $2.75.

This book is intended as a nutrition text for use in practical nurse education. Its stated objective is "to present the basic principles of nutrition and dietetics in a concise and elementary manner." The 36 chapters are divided into three sections: "Normal Nutrition," "Diet Therapy," "Selection and Care of Food." Many of the chapters suggest questions for discussion or practice exercises. The guide to pronouncing more unusual words is a helpful feature as are the index and the bibliography.

The book may accomplish its purpose moderately well, but it is unfortunate that a wide variety of subject matter has been given a rather cursory treatment. Sometimes this results in half truths or information that may be misleading to the reader. The book would be infinitely more useful if greater care had been exercised in selecting the topics, if those included had been handled with more depth, and more emphasis placed on practical application by the nurse. For example the amount of space given to discussions and illustrations of vitamin deficiency diseases seems out of place for the intended audience. Some of the charts and tables (e.g., those on cooking times, can sizes, behavior patterns of children) are unrelated to the text.

DOROTHY M. YOULAND

VIRAL AND RICKETTSIAL INFECTIONS OF MAN (3rd ed.)—Edited by Thomas M. Rivers and Frank L. Horsfall, Jr. Philadelphia, Pa.: Lippincott (East Washington Sq.), 1959. 967 pp. Price, $8.50.

The third edition of "Viral and Rickettsial Infections of Man," now edited by Rivers and Horsfall, continues to be the most authoritative and comprehensive book on medical microbiology. The size of the book and the number of contributors have been increased to permit broader coverage. In general the quality of the presentations has been maintained or improved. Advances in knowledge in the six years since the second edition was published clearly prompted and necessitated the rewriting of each chapter and the addition of seven new chapters. The impact of biochemistry and biophysics upon virology is reflected by expanded treatment. Two of the new chapters are devoted to ECHO viruses and adenoviruses, agents not recognized at the time the second edition was published. The section on the arthropod-borne virus infections has been considerably increased. Poliomyelitis is treated in three separate chapters, the last of which is essentially concerned with control by vaccination. This book is highly recommended for medical students, physicians, virologists, and public health workers, especially those responsible for control of communicable diseases. The epidemiologic point of view so well represented in previous editions is retained.

FRED M. DAVENPORT

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

AMINO ACID AND PROTEIN METABOLISM. REPORT OF THE THIRTIETH ROSS CONFERENCE ON PEDIATRIC RESEARCH. Columbus, Ohio: Ross Laboratories, 1959. 112 pp.

ANNOTATED BIBLIOGRAPHY OF APPLIED PHYSICAL ANTHROPOLOGY IN HUMAN ENGINEERING. Robert Hansen and Douglas Y. Cornog. Aero Medical Laboratory, Wright Air Development Center, U. S. Air Force, Wright-Patterson Air Force Base, Ohio. Washington, D. C.: Office of Technical Services, U. S. Department of Commerce, 1958. 301 pp. Price, $5.00.

BONNIE PRUDDEN'S FITNESS BOOK. Bonnie Prudden and Dorothy Stull. New York, N. Y.: Ronald Press, 1959. 94 pp. Price, $2.95.

BRITISH MEDICAL BULLETIN—BLOOD GROUPS. Vol. 15, No. 2 (May), 1959. London, England: Medical Department, The British Council, 1959. 174 pp. Price, $3.25.

DISEASE, LIFE AND MAN. SELECTED ESSAYS BY RUDOLF VIRCHOW. Translated and with an Introduction by Lelland J. Rather. Stanford, Calif.: Stanford University Press, 1958. 273 pp. Price, $5.00.

ELEMENTS OF PROGRESSIVE PATIENT CARE—TENTATIVE DRAFT. Jack C. Haldeman. Washington, D. C.: Public Health Service, U. S. Department of Health, Education, and Welfare, 1959. 87 pp. Limited distribution.

501 QUESTIONS AND ANSWERS IN ANATOMY. Stanley D. Miroyiannis. New York, N. Y.: Vantage Press, 1959. 332 pp. Price, $5.00.

GENETICS, RADIOBIOLOGY AND RADIOLOGY. Wendell G. Scott and Titus Evans. Springfield, Ill.: Thomas, 1959. 149 pp. Price, $5.50.

GERMFREE VERTEBRATES: PRESENT STATUS. Annals of the New York Academy of Sciences, Vol. 78, Art. 1. James A. Reyniers, et al.

New York, N. Y.: The Academy, 1959. 400 pp. Price, $5.00.

GIVE US THE TOOLS. Henry Viscardi, Jr. New York, N. Y.: Taplinger, 1959. 266 pp. Price, $3.95.

HANDBOOK OF DIET THERAPY (3rd ed.). Dorothea F. Turner. Chicago, Ill.: University of Chicago Press, 1959. 222 pp. Price, $5.00.

HOPE DEFERRED—PUBLIC WELFARE AND THE BLIND. Jacobus tenBroek and Floyd W. Matson. Berkeley and Los Angeles, Calif.: University of California Press, 1959. 272 pp. Price, $5.00.

HOW TO SLEEP WELL—THE CULTIVATION OF NATURAL REST. Samuel W. Gutwirth. New York, N. Y.: Vantage Press, 1959. 97 pp. Price, $2.95.

HUMAN PILOT DYNAMIC RESPONSE IN FLIGHT AND SIMULATOR. Edward Seckel and Ian A. M. Hall. Wright Air Development Center, Air Research and Development Command, U. S. Air Force, Wright-Patterson Air Force Base, Ohio. Washington, D. C.: Office of Technical Services, U. S. Department of Commerce, 1958. 58 pp. Price, $1.75.

IES LIGHTING HANDBOOK (3rd ed.). THE STANDARD LIGHTING GUIDE. New York, N. Y.: Illuminating Engineering Society, 1959. 1100 pp. Price, $10.00.

INSULIN TREATMENT IN PSYCHIATRY. Edited by Max Rinkel and Harold E. Himwich. New York, N. Y.: Philosophical Library, 1959. 386 pp. Price, $5.00.

MAN'S PLACE IN NATURE. Thomas H. Huxley. Ann Arbor, Mich.: University of Michigan Press, 1959. 184 pp. Price, $1.75.

THE MEDICAL SECRETARY. Kenneth B. Coffin and R. Forrest Colwell. New York, N. Y.: Macmillan, 1959. 391 pp. Price, $5.95.

MEDICINE AND ANTHROPOLOGY—THE MARCH OF MEDICINE No. XXI. New York Academy of Medicine Lectures to the Laity. Edited by Iago Galdston. New York, N. Y.: International Universities Press, 1959. 165 pp. Price, $3.00.

MENTAL DEFICIENCY—THE CHANGING OUTLOOK. Ann M. Clarke and A. D. B. Clarke. Glencoe, Ill.: Free Press, 1959. 513 pp. Price, $10.00.

MICROBIOLOGY (2nd ed.). Louis P. Gebhardt; Dean A. Anderson. St. Louis, Mo.: Mosby, 1959. 476 pp. Price, $5.75.

MODERN HEALTH. James H. Otto; Cloyd J. Julian; and J. Edward Tether. New York, N. Y.: Holt, 1959. 534 pp. Price, $4.80.

NATURAL CHILD REARING. Eve Jones. Glencoe, Ill.: Free Press, 1959. 288 pp. Price, $4.95.

NATURE OF RETIREMENT, THE. Elon H. Moore. New York, N. Y.: Macmillan, 1959. 217 pp. Price, $4.50.

ON THE MYSTERIOUS LEAP FROM THE MIND TO THE BODY. Edited by Felix Deutsch. New York, N. Y.: International Universities Press, 1959. 273 pp. Price, $5.00.

PARTNERSHIP FOR PROGRESS: INTERNATIONAL TECHNICAL CO-OPERATION. The Annals of the American Academy of Political and Social Science, May, 1959. Philadelphia, Pa.: The Academy, 1959. 222 pp. Price, $2.00.

PATHOLOGIC PHYSIOLOGY OF ORAL DISEASE. Richard W. Tiecke; Orion H. Stuteville; and Joseph C. Calandra. St. Louis, Mo.: Mosby, 1959. 480 pp. Price, $11.50.

PATIENT CARE AND SPECIAL PROCEDURES IN X-RAY TECHNOLOGY. Carol Hocking Vennes and John C. Watson. St. Louis, Mo.: Mosby, 1959. 203 pp. Price, $5.75.

PERSONAL AND COMMUNITY HEALTH (11th ed.). C. E. Turner. St. Louis, Mo.: Mosby, 1959. 446 pp. Price, $5.50.

POSTURE PROBLEM UP TO DATE, THE. May Goodall Darrow. New York, N. Y.: Vantage Press, 1959. 94 pp. Price, $3.50.

POTATO PROCESSING. William F. Talburt and Ora Smith. Westport, Conn.: Avi Publishing, 1959. 475 pp. Price, $9.50.

PRESERVATION OF EYESIGHT, THE. Sir Arthur Salusbury MacNalty. Baltimore, Md.: Williams and Wilkins, 1958. 107 pp. Price, $3.00.

PSYCHIATRY IN MEDICAL PRACTICE. W. Lindesay Neustatter. New York, N. Y.: DeGraff, 1959. 311 pp. Price, $8.00.

REHABILITATION CENTER PLANNING. AN ARCHITECTURAL GUIDE PLUS A SUPPLEMENT, 1958. F. Cuthbert Salmon and Christine F. Salmon. University Park, Pa.: Pennsylvania State University Press, 1959. 164 pp. Price, $12.50.

SCHOOL HEALTH PROGRAM. A TEXTBOOK FOR TEACHERS AND FOR OTHER PROFESSIONAL PERSONNEL IN SCHOOL HEALTH. Alma Nemir. Philadelphia, Pa.: Saunders, 1959. 428 pp. Price, $6.00.

SMOKING AND LUNG CANCER. T. W. Lees. Edinburgh, Scotland: Darien Press, 1959. 32 pp. Price, $.40.

SOCIOLOGY AND SOCIAL PROBLEMS IN NURSING (3rd ed.). Sister Mary Isidore Lennon. St. Louis, Mo.: Mosby, 1959. 491 pp. Price, $5.00.

TECHNOLOGY IN AMERICAN WATER DEVELOPMENT. Edward A. Ackerman and George O. G. Lof. Baltimore, Md.: Johns Hopkins University Press, 1959. 710 pp. Price, $10.00.

TREATMENT OF LUNG CAVITIES AND ENDOBRONCHIAL TUBERCULOSIS. Beryl E. Barsby.

Baltimore, Md.: Williams and Wilkins, 1959. 147 pp. Price, $4.75.

TUBERCULOSIS MEDICAL RESEARCH. National Tuberculosis Association 1904-1955. Virginia Cameron and Esmond R. Long. New York, N. Y.: The Association, 1959. 325 pp. Price, $5.00.

VA PROSPECTUS RESEARCH IN AGING. Veterans Administration. Washington, D. C.: Gov. Ptg. Office, 1959. 125 pp. Price, $1.50.

VISION SCREENING FOR ELEMENTARY SCHOOLS —THE ORINDA STUDY. Henrik L. Blum; Henry B. Peters; and Jerome W. Bettman. Berkeley and Los Angeles: University of California Press, 1959. 146 pp. Price, $3.75.

VOLUNTEER AND THE PSYCHIATRIC PATIENT, THE. Washington, D. C.: American Psychiatric Association, 1959. 123 pp.

WORLD DIRECTORY OF VENEREAL-DISEASE TREATMENT CENTRES AT PORTS. World Health Organization. New York, N. Y.: Columbia University Press, 1959. 162 pp. Price, $1.75.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

Raymond S. Patterson, Ph.D., F.A.P.H.A.

Thought for Tomorrow—About one in every five men who reach age 65 may expect to have an 85th birthday. One in every three women may expect to celebrate the same anniversary.

ANON. Survival to Age 65 and Beyond. Statist. Bull. Metrop. Life Insur. Co. 40, 3:1 (Mar.), 1959.

Worthy Example—Nursing researchers have long been diligent in studying nursing, and surely that art and science is the better for the studies. This particular paper summarizes only a few of these explorations into the problems of nurses and their patients, but it leads one to wonder what would happen if more researches in other disciplines were made to see what each is contributing to public health administration. This paper is good food for the thoughtful.

ABDELLAH, F. G. How We Look at Ourselves. Nursing Outlook 7, 5:273 (May), 1959.

Quick Polio Protection—Experience reported here suggests that it may be desirable, in the face of a local polio epidemic, to administer vaccine in a single dose of 10 ml, because the majority of nonimmune persons will respond more rapidly and completely. No reaction to this large dose was observed in the test subjects of this demonstration.

BARON, S., et al. Rapid Immunization with Poliomyelitis Vaccine. New England J. Med. 260, 19:966 (May 7), 1959.

Pity the Dairyman—A nonhydrogenated corn oil margarine was substituted for other solid fats—the chief dietary alteration—and it reduced blood cholesterol levels simply, inconspicuously, and acceptably.

BOYER, P. A., JR., et al. Effect of a Practical Dietary Regimen on Serum Cholesterol Level. J.A.M.A. 170, 3:257 (May 16), 1959.

Even as We—Three different (British) health authorities report on their studies of home accidents. The chief aim of the first was to reveal the incidence, nature, and causes of nonfatal accidents occurring in the middle years of life among people in a metropolitan borough. The second concerned itself with home accidents to the "under-fives" and studied the severity of injury as related

to the psychological make-up of mother and child. The third was limited to hospital-treated cases of children and assessed such matters as maternal care, social class, family size, and housing, as well as more immediate causative factors. Human nature being no respecter of national boundaries, the findings should have some significance on this side of the pond.

CHALKE, H. D., et al. Home Accidents. M. Officer 101, 17:225 (Apr. 24), 1959.

Beginnings of Health Teaching—Eleven meeting papers (the 12th to come later) explore in sequence the origin and development of the common concepts of health and the means to take toward its achievement, in ancient and modern cultures, in the East and in the West. The (British) Health Educational Journal, in which the series appears, has included in its field so much that we think of as general public health practice that it deserves a place in any health agency library regardless of the primary concerns of the agency staff, but this particular number, completely devoted to the history of health education, should be sought out for the files if the journal is not regularly subscribed to.

CHARLES, J., et al. Health Education in Classical Greece and Rome (and ten related papers). Health Ed. J. 17, 1:2 (Mar.), 1959.

HIP Revisited—Pictured in revealing detail is the home, office, and in-hospital care given by the 32 groups of HIP to its half million New York patients. How the organization measures quality is told, as are the steps taken to broaden and improve services rendered. Most of this story must be pretty well known to many of us in our Association, but this second look at the present program may prove a handy and useful reference.

DAILY, E. F. Medical Care Under the Health Insurance Plan in Greater New York. J.A.M.A. 170, 3:272 (May 16), 1959.

Coronary Candidates — Reported here is the study of a group of men who had had coronary heart disease and compared with a similar group of putatively healthy men. Statistical relationships appeared between proneness to the disease and certain variables—notably total serum cholesterol level—and a regression equation was evolved that may have predictive value as well as being a useful research tool.

GERTLER, M. M., et al. The Candidate for Coronary Heart Disease. J.A.M.A. 170, 2:149 (May 9), 1959.

Motes and Beams—An editorial commenting upon a psychiatrist's discussion of the difficulties encountered in the (British) program for the prevention of alcoholism makes five sharp points that American health leaders may want to mull over. In Britain, the editorial says, there is a special genius for assuming that "moral issues" do not exist, and further it is regarded as the inalienable right of each individual to choose his own road to perdition. Some countries—the United States for one—that have imposed drastic measures to prohibit the use of liquor have had second thoughts. As in the case of tobacco, an important industry "which produces substantial revenue to the exchequer" is interested in a substantial level of addiction. And finally, the editorial concludes, so little is known about causes of addiction that a purposeful campaign is difficult. The paper responsible for this frank editorializing is worth reading in its own right, too.

GLATT, M. M. Preventive Aspects of Alcoholism. Pub. Health 73, 7:249 (Apr.), 1959.

Immunizing Epidemic — Among groups of young institutional inmates who were theoretically immune to paralytic poliomyelitis—having previously shown evidence of acquired immunity or having had Salk vaccine—some individuals were given attenuated Type 1 vaccine by mouth. This experience fur-

nished an interesting opportunity to see just what happens during such an immunizing epidemic. What was found out will be of immense interest to any reader who has even a touch of the epidemiologist in him. (Another paper on the persistence of Type 2 antibodies in similarly vaccinated children accompanies the first.)

HORSTMANN, D. M., et al. Attenuated Type 1 Poliovirus Vaccine. J.A.M.A. 170, 1:1 (May 21), 1959.

Hot Nights — Probably you are aware that births are less frequent in March, April, and May, and reach a peak during August and September. Possible reasons for this phenomenon were put to the test and some of the assumptions seem to be valid. Further thought on these matters suggests that preventive measures might be undertaken to counteract any hazards to maternal and infant health.

PASAMANICK, B., et al. Geographic and Seasonal Variations in Births. Pub. Health Rep. 74, 4:285 (Apr.), 1959.

Community Vision—This challenging address is chiefly about ways to get a community alerted to the need for preventive mental health agencies, as distinguished from mental health clinics—which quickly become swamped, outpatient treatment centers. It concerns itself with all essential matters of "opinion leaders" and "caretakers" that you need to think about.

PORTERFIELD, J. D. Community Responsibility for Mental Health. Pub. Health Rep. 74, 4:303 (Apr.), 1959.

Stop, Look, Listen — Commonly used tranquilizers are reviewed and general indications and conditions for their use are touched upon, but the main part of the article is devoted to the discussion of organic and psychological effects. The paper might well be read by anyone who is tempted to take or prescribe, or is responsible for regulating the prescription and use of tranquilizing drugs.

SHAW, C. C., and FELTS, P. W. Treacherous Tranquilizers. Am. J. M. Sc. 237, 4:141 (Feb.), 1959.

Longevity Lengthens—Using statistical measures of the decline in death rates according to sex and color and projecting these declines, the author finds that in another decade the expectation of life at birth will reach 70.8 years for white males and 77.8 years for white females. Entirely possible progress against certain degenerative diseases may make this optimistic estimate seem conservative indeed.

TARVER, J. D. Projections of Mortality in the United States to 1970. Milbank Mem. Fund Quart. 37, 2:132 (Apr.), 1959.

Factory Medical Services—This is the story of a British experiment in industrial cooperation. An occupational health service was undertaken, as a phase of an over-all Community Health Center, to provide medical care for employees of industries too small to support whole-time, in-plant medical programs. Though the British National Health Service makes the conditions there about as different from our medical structure as they could possibly be, the report of what was done makes an absorbing story for all of us who have any concern for occupational health.

TAYLOR, C. Harlow Industrial Health Service. Lancet 7078:875 (Apr. 25 and succeeding issue), 1959.

Helping Drunks—Chronic alcoholism remains a generally neglected area of public health administration possibly because of the "skid row" stereotype concept. In this reported clinical experience, most of the patients had a higher potential for improvement. That the rehabilitation clinic was a function of the health department may have attracted more hopeful patients and per-

haps the family-oriented treatment, plus group therapy, may have contributed to the successful outcome.

THOMAS, R. E., et al. Favorable Response in the Clinical Treatment of Chronic Alcoholism. J.A.M.A. 169, 17:1994 (Apr. 25), 1959.

If additional information is desired regarding the articles listed in this bibliography, please communicate directly with the publications in which they appeared; the addresses are furnished for your convenience.

Am. J. M. Sc. (American Journal of the Medical Sciences), Lea and Febiger, 600 Washington Square, Philadelphia, Pa.

Health Ed. J. (Health Education Journal), Tavistock House, Tavistock Sq., London W.C.1, England.

J.A.M.A. (Journal of the American Medical Association), 535 N. Dearborn St., Chicago, Ill.

Lancet, 7 Adams St., Adelphi, London, W.C.2, England.

M. Officer (Medical Officer), Chronical House, 72-78 Fleet St., London, E.C.4, England.

Milbank Mem. Fund Quart. (Milbank Memorial Fund Quarterly), 40 Wall St., New York, N. Y.

New England J. Med. (New England Journal of Medicine), Massachusetts Medical Society, 8 The Fenway, Boston 15, Mass.

Nursing Outlook, American Journal of Nursing Company, 10 Columbus Circle, New York, N. Y.

Pub. Health (Public Health), Society of Medical Officers of Health, Tavistock House, Tavistock Sq., London, W.C.1, England.

Pub. Health Rep. (Public Health Reports), Gov. Ptg. Office, Washington, D. C.

Statist. Bull. Metrop. Life Insur. Co. (Statistical Bulletin of the Metropolitan Life Insurance Company), One Madison Avenue, New York 10, N. Y.

CREDIT LINES

The Journal cannot furnish copies of items mentioned in Credit Lines. Please send requests to the addresses given.

City-County Mergers in Michigan

"Local health department trends in Michigan during the last 15 years have demonstrated conclusively, just as in other states, that consolidation of city and county health departments gives the taxpayer more and better public health service for the tax dollar." This sentence begins the discussion of an article on "10 Cities-Counties Merge Health Function" in the February, 1959, issue of the "Michigan Municipal Review." With the ten consolidations the "Review" reports that only one major Michigan community remains where consolidation has not been initiated, but even there discussion is under way.

In three of the ten merger is complete; in the other seven the degree of consolidation varies, but each is working toward complete union of services and administration. Thus a population of about four million is being served through ten administrations. Populations range from about 90,000 to more than two and a quarter million.

The author of the merger story is Douglas H. Fryer, M.D., director of the state's Division of Local Health Administration. The legal and tax issues are discussed, as well as the advantages in efficiency and in better services. One should not expect lower costs, however, because of the understaffing of most departments before the merger. But one can expect more adequate service for the money spent, because there will be savings in rent and in reduction of overlapping and duplicating services.

Michigan Municipal Review (Feb., 1959), Michigan Municipal League, 205 S. State St., Ann Arbor; 30 cents per copy, $2.50 per year.

Getting's Hamilton County Study

Eventual consolidation of the disparate public health services of Hamilton County is recommended for this Ohio County of three-quarters of a million persons in the report of a recent study. "Public Health Services in Cincinnati and Hamilton County" was made by Vlado A. Getting, M.D., Dr. P. H., professor of public health practice, University of Michigan School of Public Health, for the Hamilton County Research Foundation. The foundation is described as "operated exclusively for educational purposes, to study the problems of local government operations and finance and to collect and distribute to interested persons, officials, and groups, unbiased and educational information in the local government field."

While the process of consolidation is developing and to demonstrate how it might work, Dr. Getting recommends that the county, Cincinnati, and other municipal health officers meet regularly to develop a consolidated program and that health officer vacancies be filled by joint commissionerships. Among other recommendations are district health centers to bring services close to people, combined nursing services of the official departments and the Visiting Nurse Service, fluoridation of water supplies, a maternal and child health physician to administer and coordinate school health services in Cincinnati and the county, a full-time epidemiologist for preventable disease control, all environmental health services under the supervision of a public health engineer, development of special programs in mental health, rehabilitation of chronic alcoholics, aging, chronic disease control, and rehabilitation.

The report is available from the Hamilton County Research Foundation, 4 West 7th St., Cincinnati 2. The executive director is Iola A. Hessler. No information as to cost.

State Health Department Research

The April issue of "Florida Health Notes" of the Florida Department of Health summarizes briefly 53 research projects being carried out by the department, in many instances with the cooperation of one or more other agencies. Fifteen of the projects involve eight of the county health departments; the Public Health Service or the National Health Institute is a cosponsor of 12, the Children's Bureau of two, the University of Miami School of Medicine and the National Foundation of eight each. In 15 instances the State Board of Health is the sole sponsor.

The Entomological Research Center of the department's Bureau of Entomology is carrying on 20 of the projects which are related to its mosquito control program. As an introduction to the summary of these 20 "Health Notes" says in part, "The Center is attracting considerable attention because of its unique wedding of immediately-needed and applied research with fundamental biological research into the habits of these biting insects and their special environmental needs." John A. Mulrennan is director of the Bureau of Entomology.

Other subjects under study are various aspects of the problems relating to the aged and chronically ill, retarded children, mental health, venereal disease, handicapped, migrants, infant mortality, school health, and others. A six-part study on the "Development and Evaluation of Rapid Laboratory Test Procedures" is being carried on with the joint sponsorship of the State Tuberculosis Board, the National Institutes of Health, and the U. S. Air Force School of Aviation Medicine.

Albert V. Hardy, M.D., deputy commissioner of health, directs the research program.

Philosophy of Labor Health Plans

"The Physician and Labor Health Plans" is labor's current testament as to how labor and organized medicine can work together for better health for workers and their families. The 20-page pamphlet outlines labor's stand on a number of problems and appeals "to physicians for their objective understanding of these subjects."

The subjects are the need for standards to assure high quality medical services, reasonable medical care costs, scope of benefits, solo versus group practice, and the right of labor health programs to pay selected qualified physicians a salary or retainer in accordance with mutual agreements.

The pamphlet is the last in a series on the subject of improving medical care services. The two earlier are: "Your Right to Medical Care" (10 cents) and "The Labor Health Venture and the Law" (15 cents). The current one is available from the president of the American Labor Health Association, Dr. Morris Brand, 16 E. 16th St., New York 3, N. Y.; 20 cents, reductions on quantity orders.

Air Sampling Network Data

The National Air Sampling Network of the Public Health Service has been collecting information since 1953. The Public Health Service in 1953, in cooperation with state and local health departments, began air sampling in 17 different communities. The initial purpose was to determine the protein content of air-borne particulate matter. As time, facilities, and cooperating agencies increased, the purposes of the air sampling were enlarged to permit more detailed chemical analysis and even

special investigations. The number of communities participating in the program is now 66.

"Air Pollution Measurements of the National Air Sampling Network" reports the results of the first five years of operation of the network. A short discussion of the National Air Sampling Network, presentation of statistical interpretations, and a description of analytical methods used introduces the volume which consists largely of tables of statistical data. Government Printing Office, Washington 25, D. C.; $2.

New Camp Directory

The "1959 Directory of Camps" of the American Camping Association is now available. More than 3,000 camps for children are listed alphabetically for each state. For the camps, which are members of the American Camping Association, compliance with its standards is indicated. In addition, there is a general alphabetical index and an index by camping specialty such as camp craft, canoeing, riding, music, and others. The 276-page paperbound directory is available from the American Camping Association, Bradford Woods, Martinsville, Ind.; 50 cents.

Another Fluoridation Aid

The David Graham Hall Foundation has distributed to its Dallas County neighbors two documents that might well be used elsewhere. One is a statement of a Baylor University dentist urging fluoridation upon the county fathers and giving the reasons therefor.

The second is the report of studies made by the foundation at the request of the County Medical Society of the fluoride content of the various water supplies in the county. This is a simple, clear explanation of how fluorides get into any water supply—naturally "by being picked up by water running through underground passages or crevices where the ground contains fluoride compounds," or by the addition of fluoride in controlled amounts. Included is a chart showing the fluoride content of water supplies of 25 municipalities in the county; 17 of these have a higher fluoride content than the recommended optimum for artificial fluoridation. Among the other eight, six including the city of Dallas are 70 per cent short, the two remaining are 65 and 30 per cent, respectively, deficient. One other telling point in the report of the study is the fact that fluoride content of the water supplies of some of the municipalities has decreased in recent years, as population outran the supply from natural wells and water had to be supplied from other sources. Following the submission of this report, the County Medical Society unanimously adopted a resolution recommending that each municipality in the county adjust the fluoride content of their water supplies to the optimum of approximately 1 ppm.

It is quite probable that these two items could be made available to other areas. They are valuable both for their content and for their illustration of a type of information that might be persuasive elsewhere.

R. F. Voyer is president of the David Graham Hall Foundation, 3504 Gillon Ave., Dallas 21, Tex.

Industry-University Research

The University of Chicago reports a number of productive research projects carried on with engineers of the Illinois Bell Telephone Company. Thirty-five of the latter have organized themselves as "SAVE,"—Service Activities of Volunteer Engineers. At the end of the first year, with the cooperation of medical research doctors, the engineers had completed working models of a tiny device to count the human heartbeat during a full day of activity, a machine to teach

laboratory technicians to identify cancer cells under the microscope, progress toward development of an electronic computer that reports instantaneously changes in volume of air in the lungs of a baby as an aid in detecting immediately hyaline membrane disease, one of the major killers of newborn infants. Progress has also been made in a more sensitive electronic circuit than existing equipment for accurate detection of brain tumors, an electric calorimeter for measuring changes in body heat useful in metabolism studies, and an electronic stethoscope.

Hartford and Its Social Dentists

Practicing dentists in Hartford who are also employed part time in local public health programs are being oriented through a series of lectures and discussions. The program, carried out by the City Health Department through the Hartford Foundation for Public Giving grant, is designed to acquaint these dentists "with the meaning, significance, and goals of public health . . . to promote the concept of preventive dentistry . . . to aid in bridging the gap between private dental practice and community health programs."

Under the general title of "Contemporary Problems in Community Health" a series of ten lectures and discussions was sponsored by the Health Department, the Hartford Dental Society, and the Greater Hartford Community Council. These were devoted to dimensions of public health, planning for community dental programs, solving problems in pedodontics, dental health education, prevention and control of dental and oral diseases, the role of nutrition, x-ray radiation, prepayment programs, and dental problems of senior citizens.

Leonard F. Menczer, D.D.S., public health dentist of the Health Department, was largely responsible for planning this pilot program, which he believes to be the first in the country. He would undoubtedly be glad to share the results with other public health dentists. Hartford Health Department, 56 Coventry St., Hartford 12, Conn.

Understanding Air Pollution

"What's in the Air?," a 20-page pocket-size pamphlet, discusses in everyday language the problem of community air pollution—some of its causes, some of its results, and some possible control measures. Eye-catching pencil sketches illustrate the booklet. Hazel Holly wrote the manuscript. Public Affairs Pamphlet No. 275, 22 East 38th St., New York 16, N. Y.; 25 cents.

Atmospheric Pollution Measurement

"Instruments for the Study of Atmospheric Pollution," third edition, presents under ten separate headings an outline of the different types of instruments used in measuring air pollution and where they are available. A list of producers of the various instruments concludes the volume. Order Department, American Society of Mechanical Engineers, 29 West 39th St., New York 18, N. Y.; $2.

Annual Reports

The Biennial Report of the Louisiana State Board of Health is chiefly a report of the 63 parish health departments. This section, one of 27 in the report, takes up more than half the text. It includes a discussion of the history and present status of health services in each of the parishes and several tables of statistical data, such as population, mortality trends, health center construction, and services rendered.

Except for New Orleans, whose Board of Health was organized in 1898, the first parish health unit dates back to

1917 when Rapides was organized. It was discontinued in 1923 not to be reorganized until 1934. The last two of the 63 were organized in 1957. Of the 63, millage taxes for the support of health units have been voted in 23.

The shortage of public health physicians is graphically illustrated in a table of health unit directors. Each of the parishes have full-time nursing, sanitation, clerical and often other staff, but few have full-time medical officers. This position is frequently filled by part-time clinicians or by medical officers shared by two or more parishes. Regional supervision substitutes for medical officers in 14 parishes. Seven have full-time health officers; 42 are served by 18 medical officers who divide their time among two, three, or four parishes. Only four parishes had a 1957 population of more than 50,000, only 20 of more than 25,000. The smallest parish has just under 5,000 population.

The special parish stories give an interesting picture of the variety of services provided in the separate parishes. The listing of changes in health administrators during the life of each unit is a still further commentary on the competition for medical personnel.

"American Cancer Society Annual Report: 1958" is both a report of the society's activities during the year and an attempt to picture the general status of cancer control at the present time. The society describes itself as "the only national organization devoted to the defeat of cancer with programs of research, education and service to patients" and its annual report as a "source book of the cancer control movement."

With pictures and text the report does an outstanding job of making vivid some of the problems in finding the causes and cure of this "group of perhaps hundreds of diseases" that cause about 75,000 deaths a year. Made vivid too are the complex of activities now carried on by the parent society and its 60 divisions to the tune of more than $31 million. In 1957 expenditures for education, research, and service to cancer patients represented 28, 29, and 25 per cent, respectively, of the total.

American Cancer Society, 521 West 57th St., New York, N. Y.

NEWS FROM THE FIELD

WHO News

Training in Nuclear Energy Problems

With the advent of atomic energy has come the realization that its presence, in one way or another, will eventually touch the lives of all the earth's beings. Already radiation has become a valuable tool in medicine and its allied disciplines. WHO has published two reports dealing with training in nuclear energy in the undergraduate medical curriculum and in postgraduate training in public health.

The former, "Introduction of Radiation Medicine into the Undergraduate Medical Curriculum," suggests courses in atomic physics and the effects of ionizing radiation of tissues. In the clinical period of studies, emphasis should be placed on diagnostic and therapeutic uses of radiation, with some attention to genetic effects. Integrating training into the medical curriculum, arousing present medical school staff to the importance of radiation medicine, and developing methods of teaching this subject are further recommendations.

"Postgraduate Training in the Public Health Aspects of Nuclear Energy" considers the degree of knowledge the separate members of the public health team should possess with respect to physical principles, biological principles, the application of nuclear energy and radiation, hazards, and protection. Mention is made of the positive uses of radioactivity such as tracer uses of isotypes and food and drug preservation and sterilization, as well as the negative aspects, such as protection from hazards, disposal of radioactive effluents, and public health legislation on the control of hazards. A glossary of terms is appended.

Reports are available from Columbia University Press, 2760 Broadway, New York 27; 30¢ and 60¢ respectively.

The Membership Is Now 88

Among the announcements made at the recent 12th World Health Assembly in Geneva was that both the Republic of Colombia and Guinea had each joined as full members, thus bringing the total WHO membership to 88.

No Segregation for Leprosy Victims

The uselessness and inhumanity of segregating leprosy patients was stressed at a recent conference in Brazzaville. In addition, segregation in a leprosarium is one hundred times more costly than treatment at home, according to this Conference for Leprosy Control in Africa, called jointly by WHO and the Commission for Technical Cooperation in Africa. Furthermore, compulsory segregation hinders both case finding and rehabilitation. Even children need not be removed from parents since they can be protected by the administration of sulfones to family contacts.

Revision of earlier harsh antileprosy regulations still in effect in some areas was recommended, as was early action to prevent the disfigurements associated with leprosy. Health education is important to a control program, particularly in case finding, in encouraging regular treatment, and in community acceptance of the leprosy patient.

Progress Is Uneven

In the introduction to his report to the World Health Assembly and to the United Nations, WHO Director-General M. G. Candau, M.D., says:

"Even a very cursory study of the reports of the regional directors on the work done in 1958 will show that, while the remarkable advances in health which started ten years ago continue, many of the original handicaps nevertheless remain unchanged. Administrative delays are still interfering with the execution

of important projects; in some cases counterparts of WHO field staff are as elusive as before. Above all, the shortage of trained and even semi-trained personnel is still very acute and, in many places, downright critical. Priority still goes to the building of hospitals, laboratories, and health centers, rather than to the education and training of the people needed to staff these institutions. Partly because of lack of funds and partly because of the lack of determination to improve existing conditions, the state of environmental sanitation remains unsatisfactory. Much still remains to be done to develop national health statistical services and to train expert medical workers in this field.

"If in many cases it can be argued that financial considerations make it difficult for governments to devote more to even indispensable health work, it remains true that, to a very considerable extent, the failure to advance is a responsibility which WHO must share with the governments concerned. It is therefore with this knowledge of tasks still to be fulfilled that we must assess any progress made in 1958, as well as in preceding years."

In Dr. Candau's critical review of ten years of work he mentioned the growing confidence of member states in WHO. He warned of the danger that certain diseases might spread to areas previously relatively unaffected, such as the invasion of venereal syphilis in areas cleared of yaws, tuberculosis to new industrial areas, and bilharziasis to newly irrigated regions.

Malaria eradication is still the major problem. Scattered efforts for BCG vaccination are being replaced by integrated national programs of control. More work needs to be done on polio vaccines particularly in regard to Type I virus.

Ministries of health need to develop a "sanitation consciousness." In this connection, Dr. Candau suggested concentration on a single aspect of sanitation, such as water supply might in satisfying a popular demand, be more effective than broad-scale projects. In many countries sickness could be halved by providing safe drinking water and proper waste disposal.

In relation to the shortage of trained personnel WHO in 1958 continued its studies on medical education and provided 33 senior visiting teachers to medical schools. More than 1,300 fellowships for studies abroad were granted of which nearly one-fourth were awarded to women.

A Patient's Bill of Rights

"Nursing for a Growing Nation" was the theme of the recent biennial meeting of the National League for Nursing in Philadelphia. At the first evening keynote program, Norman Cousins, editor of the Saturday Review, spoke on education in today's world. At this time also the eighth biennial Adelaide M. Nutting Award for distinguished service to nursing was presented to Effie Jane Taylor, R.N., retired, who was cited as "an excellent teacher, capable administrator, and a good team worker who won the respect and cooperation of all groups with whom she was associated." Miss Taylor was graduated from Johns Hopkins School of Nursing in Miss Nutting's last class, was the second dean of the Yale University School of Nursing, the first executive secretary of the National League for Nursing Education, and is a past-president of the International Council of Nurses.

At the opening of the convention, President Ruth B. Freeman, Ed.D., released an official statement hammered out in two years of discussion by more than 3,000 people entitled "What People Can Expect of Modern Nursing Service." The tenets of this seven-point "patient's bill of rights" are:

The patient has a right to expect that:
He will receive the nursing care necessary

to help him regain or maintain his maximum degree of health.

The nursing personnel who care for him are qualified, through education, experience and personality, to carry out the services for which they are responsible.

The nursing personnel caring for him will be sensitive to his feelings and responsive to his needs.

Within the limits determined by his doctor, the patient and his family will be taught about his illness so that the patient can help himself, and his family can understand and help him.

Plans will be made with him and his family, or if necessary for him, so that, if possible, continuing nursing and other necessary services will be available to him throughout the period of his need. These plans will involve the use of all appropriate personal and community resources.

Nursing personnel will assist in keeping adequate records and reports and will treat with confidence all personal matters that relate to the patient.

Efforts will be made by nursing personnel to adjust the surroundings of the patient so as to help him maintain or recover his health.

The following officers were elected to serve for the coming biennium:

President: Lucile Petry Leone, chief nurse officer, Public Health Service

Vice-Presidents: Helen Nahm, dean, School of Nursing, University of California

John S. Millis, president, Western Reserve University

Edna J. Brandt, chief, Bureau of Nursing, California State Department of Health

Treasurer: Henry C. Mills, vice-president for educational administration, University of Rochester

Royal Society of Health Meets

The 66th Congress of the Royal Society of Health met in Harrogate, England, April 27-May 1, with an attendance of approximately 3,000. Two Fellows of the American Public Health Association represented it, Homer N. Calver and Gordon Fair, D.Sc., of Harvard University. Mr. Calver represented as well the Empire State Health Council and the National Association of Sanitarians.

Gordon M. Fair, professor of public health engineering, Harvard University, and representing the university, gave the annual Chadwick lecture, discussing "New Factors in Man's Management of his Environment."

Mr. Calver made the official response on behalf of more than 100 overseas delegates from 40 countries at the reception for them in which he said "We are most grateful, my Lord (Rt. Honorable, the Lord Cohen of Birkenhead, President of the Congress) for the sustained warmth of your hospitality. We partake with eagerness and satisfaction of the rich feasts you have laid before us . . . the solid carbohydrates of experience, the proteins of wisdom, the vitamins of inspiration."

Mr. Calver participated in the discussions of the papers on world health. Here he illustrated the need for the social scientist, for teaching group action, and above all for respecting the culture of the country receiving health planning assistance.

At a meeting of the Section on Preventive Medicine, Jonas E. Salk, M.D., representing the University of Pittsburgh, was presented a scroll of honorary fellowship in the R.S.H. by the President, the Rt. Honorable Lord Cohen. Here Dr. Salk spoke on "Vaccination Against Poliomyelitis: An Ounce of Prevention." At the same session, Philip Drinker, D.Sc., professor of industrial hygiene, Harvard University, discussed "Industrial Hygiene and Air Pollution."

Among other APHA Fellows or Members who were present and are Honorary Fellows or Members of the Royal Society were Howard Ennes, representing the International Union for Health Education, and R. G. Bond, Minnesota University, representing the Minnesota State Board of Health.

The 1960 Congress of the Royal Society of Health will be held in Torquay, April 25-29.

Pfizer Drugs for Tibetan Refugees

By May 7 a first emergency shipment of life-saving drugs was on its way to India following an appeal to American industry for aid for Tibetan refugees. The drugs, terramycin, penicillin, and others, were sent to India's Central Committee for Tibetan Relief by the American Emergency Committee for Tibetan Refugees. This was the first of a lot estimated to be worth $350,000 donated by Pfizer Company, pharmaceutical manufacturers. In addition, similar aid has been offered by Bristol-Myers and other drug firms. At the time of the initial shipment more than $700,000 in supplies had been pledged during the first week.

Lederle Summer Fellowships

Nearly 200 medical students in 97 United States and Canadian medical schools are devoting summer vacations to research in preclinical departments with the aid of fellowships provided by Lederle Laboratories Division of American Cyanamid Company. Selection of recipients was made by deans of the schools. Each of the four-year schools received $1,200 for awards to at least two students, two-year schools received $600. During the six years of this program Lederle has provided nearly $700,000 to assist more than 1,000 students. W. B. Carey, M.D., is Lederle medical director.

International Health Year Boosted

All possible encouragement and cooperation in an International Health Year was high on the recommendations of the Second National Conference on World Health, called in Washington, May 7-9. Honorable Arthur S. Flemming, secretary of health, education, and welfare, addressing a dinner session, was among those pressing for such a program. Surgeon General Leroy E. Burney of the Public Health Service announced that he would make this proposal on behalf of the United States at the 12th World Health Assembly opening in Geneva on May 12. Senator Richard Neuberger of Oregon said "We took the trouble to look at rocks and ice during the International Geophysical Year; now let's look at humans and protoplasm." The sponsoring organizations of the National Citizens Committee for World Health Organization were asked to discuss International Health Year with a view to taking whatever action was in harmony with their principles.

Six half-day Alan Gregg Memorial Forum Sessions were held simultaneously on Health and the American Image Abroad, an International Health Year, International Medical Research Cooperation, Health and Economic Development, Training and Exchange Programs and Problems, and Health and Population Dynamics.

A recurring note of the Conference was the American image abroad. Senator Walter Judd of Minnesota, Undersecretary Andrew W. Cordier of the United Nations, President Frank G. Boudreau of the Milbank Memorial Fund, and Leonard W. Larson, M.D., chairman of the Board of Trustees of the American Medical Association, each addressed themselves to this theme. Senator Judd described this image as being made up of what we do and are here in our own country, what we export, our lack of language among both tourists, diplomats, and business men, and our foreign aid program which is too military, too tied up with quid pro quos and moralizations, and our technical assistance, which is often based on what we think rather than what the receiving country thinks it needs. In the words of Mr. Cordier "so often you scratch us where we don't itch."

Ernest L. Stebbins, M.D., dean of the Johns Hopkins School of Hygiene and

Public Health, president of the National Citizens Committee for the World Health Organization, presided at many of the sessions. Milton S. Eisenhower, president of the university, was chairman at the opening meeting. He too emphasized the importance of International Health Year and its potential for successful international cooperation.

Full proceedings of the conference will be available at a later date.

Poultry Ordinance Supplement

"Poultry Ordinance, 1955 Edition, Supplement No. 1" has been published by the Public Health Service in response to requests from local and state health departments for provisions requiring ante-mortem and post-mortem inspection of poultry for wholesomeness. The basic ordinance, No. 444, and Supplement No. 1 are available from Public Health Service, Washington 25, D. C.

New Jersey Bans Open Dumps

The New Jersey Public Health Council in May, 1957, modified the State Sanitary Code declaring dumps to be nuisances hazardous to human health and requiring that after July 1, 1958, the disposal of organic or combustible matter on land in the state shall be made only through the use of sanitary landfills or incinerators established and maintained according to regulations of the State Department of Health.

On January 1, 1957, there were 23 landfills in the state. This number had increased to 77 by February, 1959. Garbage and refuse from 234 New Jersey municipalities, comprising 38 per cent of the state's population, were disposed of in this sanitary manner. Costs for operation of the landfill vary from 10 to 30 cents per cubic yard or from $1 to $2 a ton. Since 1951 and until February, 1959, the number of incinerators in operation decreased from 25 to 17. All this is reported in a 1959 publication, "In New Jersey Open Dumps Are Disappearing."

A limited number of copies are available from the New Jersey State Health Department, Trenton 25, N. J.

SKF Rehabilitation Fellowship

A fellowship in physical medicine and rehabilitation for a Mexican physician has been created by Smith, Kline, and French, pharmaceutical manufacturers, and is being administered by the World Rehabilitation Fund in cooperation with the International Society for the Welfare of Cripples.

The first physician granted the fellowship is Dr. Leobardo Ruiz of Mexico City who on July 1, 1959, began a three-year period of training at the Institute of Physical Medicine and Rehabilitation of the New York University-Bellevue Medical Center.

The announcement of the fellowship and its first winner was made at the American Embassy in Mexico City by the United States Ambassador to Mexico, Robert C. Hill, and the president of the Mexican Rehabilitation Association, Romulo O'Farrill. In New York the announcement was made by Howard A. Rusk, M.D., president of the World Rehabilitation Fund. This fund is supported by American industry, foundations, and individuals to assist in the international development of rehabilitation services. Currently, 71 trainees from 35 countries are receiving advanced training in the United States under the fund's auspices.

AWWA Elects

The newly elected officers of the American Water Works Association, who take office at the July annual meeting, are:

President: Lauren W. Grayson, general manager and chief engineer, Public Service Department, Glendale, Calif.

Vice-President: C. F. Wertz, Department of Water and Sewers, Miami, Fla.
Treasurer: William J. Orchard, consultant, Wallace and Tiernan.

1959-1960 Rehabilitation Courses

The annual rehabilitation courses at the Institute of Physical Medicine and Rehabilitation have now been planned for the coming academic year. The three different sessions of the four-week course in "Advanced Physical Rehabilitation Methods for Physical and Occupational Therapists" will be given November 16-December 11, 1959; February 1-26 and April 25-May 20, 1960. Rehabilitation of severe disabilities, skills and methods of functional activities, and clinical practice and observations will be covered. Tuition and university fees are $150, books are estimated at $35, living expenses at $50-$60 per week. It is suggested that scholarships be requested from the National Foundation, 301 East 42nd Street, or from local church clubs, Rotary or Elks Clubs, and similar groups.

The three-week course for registered nurses with at least one year's experience will be given October 19-November 6, 1959, and January 4-22 and March 28-April 15, 1960. Tuition is $115, other expenses as for therapists. Scholarships may be available from local groups.

Further information and application blanks from Mrs. Edith Buchwald Lawton, Institute for Physical Medicine and Rehabilitation, 400 East 34th Street, New York 16.

National Organizations Consider Aging

A first conference of national agencies under voluntary auspices on "Mobilizing Resources for Older People" was held in New York City on May 4-5. Sponsored by the National Committee on the Aging of the National Social Welfare Assembly, it was attended by 300 persons representing some 100 national organizations concerned with health and welfare programs.

The objectives of the conference were to consider the role of national organizations in meeting "the significant social challenge of this century"; to find ways to help local affiliates establish or improve services to older persons; to make known the resources available to national groups; and to explore how they can work together in achieving these objectives.

At the opening session Geneva Mathiasen, executive secretary of the National Committee on the Aging, emphasized the importance of employment of the older person, of independent living, and of continued status in the family and the community. Especially mentioned for preventive health care were the well adult conferences of the New Jersey and Virginia State Health Departments.

Another plenary session was a local challenge to national organizations. The director of work with older persons and the chronically ill of the Cleveland Welfare Federation, Mildred Barry, said to the national organizations that care of the aging is their concern; they must inform themselves, talk about the problem, and particularly help their local affiliates cooperate—and often lead—in developing local programs.

A third plenary session devoted to financing heard from Thomas H. Carroll, vice-president of the Ford Foundation, on what can be expected from a foundation. The Foundation has supported research on the aging problem in a number of universities and has made possible the expanded activities of the National Committee for the Aging, among others in this field. Financing by a community trust, through government grants, and in local communities were other possibilities discussed.

The workshops defined the role and opportunity of national organizations in improving services respectively to individuals, groups, communities, and insti-

tutions. Background speaker for the first was William Posner, assistant director, Jewish Community Services of Long Island. Here among other discussants, Frederick C. Swartz, M.D., Committee on Aging of the American Medical Association, reported its aims as informing itself of the work of other agencies, stimulating state and local associations to form committees on aging, and to develop an inventory of resources.

The background speaker in the groups workshop, Jean M. Maxwell of the National Committee on the Aging, suggested that the principal role of national organizations might well be the training of both voluntary and professional personnel.

In the services to communities group, Gordon Manser, executive secretary of the Baltimore Council of Social Agencies, emphasized the broad concern going beyond social agencies in problems of older persons. The resource persons in this group emphasized this broad concern representing as they did housing, universities, group work, councils of social agencies, mental health, churches, social work education, minority groups, and government agencies such as the Veterans Administration and the Public Health Service.

In the institutional services group, Morris Zelditch, director of social planning, Council of Jewish Federations, as background speaker, cited institutions as the oldest but most backward of services. The complex of services now developing include not only medical and nursing care, but also housing, recreation, physical and occupational therapy, and most importantly, home care.

The luncheon sessions were devoted to resources and to programs in action. In the first, Ollie Randall, of the National Committee on the Aging, suggested it as a basic resource and as a clearinghouse of current information. William C. Fitch, director of the Special Staff on Aging, Department of Health, Education, and Welfare, told of a handbook in preparation of national organizations with interest in aging. This will cover descriptions of the resources and programs of nearly 300 such agencies.

Programs in action of Altrusa International, the American Medical Association, and the United Housing Foundation were described. The retirement program of the United Auto Workers, as described by Charles E. Odell, includes services to workers in preparation for retirement, community facilities for retired workers, and especially "drop in" centers where they may visit with each other and receive counseling service.

Edward Linzer of the National Association for Mental Health summarized the workshops. Outstanding among the recommendations of the groups was the need for more research in this area, and the need for a mechanism through which national organizations can get together periodically to share experience and to work out common goals and ways of meeting them.

Proceedings of the conference will be available at a later date.

Shortly after the conference the committee announced an $18,000 grant from the Schimper Foundation to conduct a study of dependency and guardianship of older persons. Because an estimated 5 to 10 per cent of older persons need this service, agencies such as the Bureau of Old Age and Survivors Insurance and the Bureau of Public Assistance have asked for the study.

PERSONALS

HARVEY ADELSBERG, M.P.A.,† former assistant administrator, Brooklyn Hebrew Home and Hospital for the Aged, is now assistant director, Jewish Chronic Disease Hospital, Brooklyn.

ELMER J. ANDERSON, Ed.D., M.P.H.,* former associate health secretary, Social Agencies of Rochester and Monroe County, N. Y., is now assistant to the director, Monroe County Department of Health.

* Fellow.
† Member.

ARNOLD ARCH, presently president, has been named executive secretary, Air Pollution Control Association. He also heads APCA-sponsored Multiple Air Purification Fellowship of the Mellon Institute as senior fellow.

DEREK H. R. BARTON, Sc.D., Ph.D., professor of organic chemistry, Imperial College of London, has received, for his authoritative work on the chemical structure of natural products, the first biennial and 1959 Roger Adams Award in Organic Chemistry of $5,000 and a gold medal from the American Chemical Society. Dr. Barton also received the American Chemical Society's 1957 Fritsche Award of $1,000 for his outstanding achievements in analysis, in research, and in new applications of essential oils and related chemicals.

LYNN S. BEALS, JR., M.D., captain, USN, former chief of neuropsychiatry, U. S. Naval Hospital in Chelsea, has been appointed executive director, Massachusetts Association for Mental Health, Inc.

HERBERT M. BOSCH, M.P.H.,* professor of environmental sanitation, University of Minnesota School of Public Health, and a Missouri alumnus, received an honor award for distinguished service in engineering of the University of Missouri at its recent Engineering Day activities.

RENA BOYLE, R.N., Ph.D., nurse consultant, Division of Nursing Resources, Public Health Service, has been designated to head the division's newly created Nursing Research and Consultant Branch, which combines the functions formerly carried out by the Nursing Services and the Nursing Education Branches.

GEORGE M. BRIGGS, Ph.D.,† chief, Nutrition Unit, Laboratory of Nutrition and Endocrinology, National Institutes of Health, has received the Borden Award of a gold medal and $1,000 of the Poultry Science Association, for basic research in the area of nutritional interrelationships.

MADISON B. BROWN, M.D., an associate director, American Hospital Association, has been appointed director of professional services and secretary, Council on Professional Practice. In the latter capacity he succeeds LEROY E. BATES, M.D., resigned to become director, Union Memorial Hospital, Baltimore.

STANLEY WILSON DERAMOS, M.D., former assistant attending physician, Harlem Hospital, has received an appointment as health officer in training, New York City Health Department.

HAROLD S. DIEHL, M.D.,* dean emeritus of the University of Minnesota College of Medical Sciences, and senior vice-president for research and medical affairs and deputy executive vice-president, American Cancer Society, was honored recently at a medical symposium and dedication of a new medical school building named Diehl Hall.

B. G. DININ, M.D.,* former general medical superintendent, New York City Department of Hospitals, is now director, Grasslands Hospital, Valhalla, N. Y.

CHARLES G. DURBIN, V.M.D., former associate director, Veterinary Medical Branch, has been appointed veterinary medical director, Bureau of Medicine, U. S. Food and Drug Administration. He has been succeeded as associate director by FRED J. KINGMA, D.V.M., former veterinarian in the branch.

ALFRED S. EVANS, M.D.,* former director, Preventive Medicine Section of Student Health, and associate professor of medical microbiology, University of Wisconsin Medical Center, has been appointed chairman of the newly established Department of Preventive Medicine at the center and director of the State Laboratory of Hygiene. In the latter position he succeeds WILLIAM D. STOVALL, M.D.,* director for over 30 years.

WALTER L. EVANS, M.D., former assistant medical director, J. N. Adam Memorial Hospital (Perrysburg), New York State Department of Health, is now communicable disease chief, Columbus (Ohio) Department of Health.

LLOYD FLORIO, M.D., Dr.P.H.,* former manager, Denver Department of Health and Hospitals, is now chief of the Health Mission, USOM, to the Philippines, in care of American Embassy, A.P.O. 928, San Francisco, Calif.

IRA W. GABRIELSON, M.D.,† former instructor in public health administration and pediatrics, Johns Hopkins School of Hygiene and Public Health, has been appointed director, Community Program for Mentally Retarded Children at New Haven, Bureau of Maternal and Child Hygiene, Connecticut State Department of Health.

FRANK J. GIBSON, former associate in charge of case finding in the Program Development Division, has been appointed associate director, Personnel and Training Division, National Tuberculosis Association.

GRACE GOLDSMITH, M.D.,* professor of medicine, Tulane University Medical School, has received the 1959 Osborne-Mendel Award of the Nutrition Foundation, consisting of $1,000, for her contribution in the field of macrocytic anemias, in the clarification of

* Fellow.
† Member.

the relationship of tryptophan and niacin in human nutrition, and in the field of protein malnutrition.

HULDA GROSS GROBMAN, former interim assistant professor, College of Education, University of Florida, is now research associate, Western Interstate Commission for Higher Education, with headquarters at the University of Colorado, Boulder.

MARY L. HEMMY,* former professor of social casework, School of Medicine and the Graduate School of Social Work, University of Pittsburgh, has been appointed executive director, Benjamin Rose Institute, Cleveland, Ohio. The institute administers the Benjamin Rose and nine other funds providing service to older persons in the Cleveland area.

E. GARTLY JACO, Ph.D.,† director, Division of Medical Sociology, University of Texas Medical Branch, directed a project on "The Effects of Cultural Differences and Experimentally Induced Ward Structures on Therapeutic Outcome" at the Cleveland Psychiatric Institute and Hospital in June, and was a visiting professor, Departments of Sociology and Psychiatry, Western Reserve University.

RICHARD L. JOHNSON,† secretary, Council on Administrative Practice, American Hospital Association, has been appointed also assistant director of the association, and director of administrative services.

BEN KEMPER, former publicity account executive, Cunningham and Walsh Advertising Agency, and a publicity and promotion manager, RCA Victor Record Division, has been appointed an associate, Division of Education and Public Relations, National Tuberculosis Association.

MABEL D. KIRKPATRICK, former assistant director, has succeeded HESTER B. CRUTCHER, retired, as director of social services, New York State Department of Mental Hygiene.

BERTRAM KIRSCH, Ph.D., formerly on the staff, Connecticut State Commission on Chronic Illness, Aged, and Infirm, has been appointed senior clinical psychologist, Community Program for Retarded Children at New Haven, Bureau of Maternal and Child Hygiene, Connecticut State Department of Health.

IRVING LADIMER, J.D.,† former project administrator, School Health Survey, Community Council of Greater New York, is now health research specialist, Health Services Coordination Study, New York City Council of Jewish Federations and Welfare Funds.

HILARIO LARA, M.D., Dr.P.H.,† dean, Institute of Hygiene, University of the Philippines, has retired after 40 years of service in the government.

ETHEL MARIE MILLER, M.P.H.,† former nutrition consultant, Oregon State Board of Health, has been appointed director of nutrition, University Hospital, Baltimore, Md.

MELVINA PALMER, R.N.,* former director of nursing, Bucks County (Pa.) Department of Health, now chief nurse, Rensselaer (N. Y.) County Health Department, has been succeeded in Bucks County by ELIZABETH OGDEN, R.N.,† with the department for the past two years.

FRANCES CHERRY PARKER, R.N., community nursing instructor and writer, University of North Carolina, is winner of the 1959 Roberts Fellowship of the American Journal of Nursing. She will take a full schedule of courses at the university in working toward a master's degree in journalism.

THOMAS PARRAN, M.D.,* president, Avalon Foundation, and former Surgeon General, Public Health Service, and ex-dean, University of Pittsburgh Graduate School of Public Health, has been elected to honorary membership in the National Association of Science Writers for "a major contribution toward fostering the dissemination of accurate scientific knowledge by the press of the nation."

HOWARD R. PYLE, M.P.H.,† former deputy assistant to President Eisenhower in the field of federal, state, and local government relations, is now president, National Safety Council. Mr. Dearborn has become president emeritus.

WILLIAM M. SCHMIDT, M.D.,* associate professor of maternal and child health, Harvard School of Public Health, was a member of a team of pediatricians and public health specialists, sponsored by the Unitarian Service Committee, leading a symposium at the International Children's Center, Paris, France, in April.

MARVIN A. SCHNEIDERMAN, chief statistician, Cancer Chemotherapy National Service Center, Public Health Service, is one of 11 federal government employees who received a Rockefeller Public Service Award administered by Princeton University. Mr. Schneiderman will spend the academic year 1959-1960 at the London School of Hygiene and Tropical Medicine studying methods of conducting more efficient cooperative clinical trials, particularly in cancer, through the development of new statistical technics.

MABEL H. SHONLEY, R.N., M.A., director, Visiting Nurse Association, Atlantic City, N. J., has retired after 16 years of service.

* Fellow.
† Member.

JOHN C. SMITH, former psychiatric counselor, Bennington College, has been appointed epidemiologist, Division of Sanatoria and Tuberculosis Control, Massachusetts State Department of Health.

ROGER F. SONDAG, M.D., M.P.H.,* former health officer, Jackson County (Ill.) Health Department, is now health officer, Southern Region, State Department of Public Health, with headquarters in Carbondale.

JAMES H. STEWART, M.D.,† former administrative medical consultant, Division of Vocational Rehabilitation, Oregon Department of Education, is now medical consultant, State Public Welfare Commission, Portland.

DAVID F. STONE, M.D.,† former director, Bureau of Local Special Health Services, Indiana State Health Department, has resigned to join Eli Lilly and Company, Indianapolis.

ADDIE G. THOMAS,† former associate chief, has succeeded KATHLEEN ALLEN,† retired, as chief, Medical Social Services Division, the National Foundation.

RAY E. TRUSSELL, M.D., M.P.H.,* chairman, School of Public Health and Administrative Medicine, Columbia University, has been appointed executive director, on a part-time basis, of the New York City Commission on Health Services set up by Mayor Wagner to recommend measures for cutting costs and improving care in the city's hospitals.

ROSE UNDERWOOD, R.N., former public health nurse, Claire-Gladwin-Arenac District Health Department, now holds the same position with Shiawassee-Livingston District Health Department (Mich.), assigned to Livingston County.

WARREN WEAVER, M.D., vice-president, Rockefeller Foundation, and former president, American Association for the Advancement of Science, has been elected to honorary membership in the National Association of Science Writers for a major contribution toward fostering the dissemination of accurate scientific knowledge by the press of the nation.

ROBERT L. ZOBEL, M.D., M.P.H., former assistant chief, Division of International Health, Public Health Service, is now area medical officer, Division of Indian Health, Portland, Ore.

DEATHS

EDWIN H. CARNES, M.D., chief of the Division of Hospitals, Connecticut State Department of Health on April 13.

AMELIA M. ENGEL† of Palisades Park, N. J., on August 28, 1958 (Public Health Nursing Section).

ALICE GRIFFITH† of San Francisco, Calif., on February 22 (Maternal and Child Health Section).

CONFERENCES AND DATES

American Public Health Association, Eighty-Seventh Annual Meeting, Atlantic City, N. J., October 19–23, and Related Organizations, including:

American Association of Public Health Physicians
American Association for Vital Records and Public Health Statistics
American College of Preventive Medicine
American Heart Association
American Industrial Hygiene Association
American Labor Health Association
American National Council for Health Education of the Public
American School Health Association
American Society of Professional Biologists
Association of Business Management in Public Health
Association of Reserve Officers of the U. S. Public Health Service
Association of Schools of Public Health
Association of State and Territorial Public Health Nutrition Directors
Association of State Maternal and Child Health and Crippled Childrens Directors
Association of State and Territorial Directors of Public Health Nursing
Association of Teachers of Preventive Medicine
Committee on Medical Care Teaching of the Association of Teachers of Preventive Medicine
Cleveland Health Museum National Advisory Council
Commissioned Officers Association of the U. S. Public Health Service
Conference for Health Council Work
Conference of Municipal Public Health Nurse Directors, Executive Committee
Conference of Municipal Public Health Engineers
Conference of Public Health Veterinarians
Conference of State and Provincial Health Authorities of North America
Conference of State and Provincial Public Health Laboratory Directors
Conference of State Sanitary Engineers
Conference of State Directors of Public Health Training

* Fellow.
† Member.

Industrial Medical Association
Mental Health Nurse Consultants
Military Government-Civil Affairs Public Health Society
National Association of Sanitarians
National Citizens Committee of the World Health Organization
National Health Council
National Society for the Prevention of Blindness
National Tuberculosis Association
Public Health Cancer Association of America
Social Workers in Health and Welfare Programs
Society of Public Health Educators
Alumni Groups:
California Public Health Alumni Association, University of
Columbia University School of Public Health Alumni
Delta Omega
George Peabody College Alumni
Harvard Public Health Alumni Association
Johns Hopkins University Alumni
Michigan Alumni, University of
Minnesota, University of
North Carolina Alumni, University of
Pittsburgh Alumni, University of
Toronto University, School of Hygiene
Tulane University Alumni
Yale University Alumni

State and Regional Public Health Meetings—July, August, and September:

Cuba Public Health Association. Havana. August.
Florida Public Health Association. Hotel Hillsborough, Tampa. Sept. 24–26.
Massachusetts Public Health Association. University of Massachusetts, Amherst. September 2–3.
Minnesota Public Health Association. Raddisson Hotel, Minneapolis. Sept. 24–25.
Nebraska Public Health Association. Hotel Cornhusker, Lincoln. Sept. 23–24.
North Carolina Public Health Association. Robert E. Lee Hotel, Winston-Salem. Sept. 24–28.
Pennsylvania Public Health Association. University Park, Pa. August 16–20.
South Dakota Public Health Association. Hotel Cataract, Sioux Falls. Sept. 30–Oct. 2.
Tennessee Public Health Association. Maxwell House, Nashville. Sept. 30–Oct. 2.

Meetings of Other Organizations:

American Dental Association (Centennial Session). Coliseum, New York, N. Y. Sept. 14–18.
American Dietetic Association. Shrine Convention Hall and Auditorium. Los Angeles, Calif. August 25–28.
American Hospital Association. Coliseum and Statler-Hilton Hotel, New York, N. Y. August 24–27.
American Pharmaceutical Association. Cincinnati, Ohio. August 16–20.
American Water Works Association. San Francisco, Calif. July 12–17.
Industrial and Building Sanitation-Maintenance Show and Conference. (Fourth). New York, N. Y. Sept. 22–24.
International Congress on Air Pollution. New York, N. Y. September 9–10.
International Medical Conference on Mental Retardation (First). Eastland Hotel, Portland, Me. July 27–31.
National Recreation Association. Chicago, Ill. Sept. 27–Oct. 2.
United States Conference of Mayors. The Statler-Hilton Hotel. Los Angeles, Calif. July 13–15.
Waste Disposal in the Marine Environment, First International Conference. University of California, Berkeley. July 22–25.
World Conference on Medical Education (Second). (The World Medical Association in Collaboration with the World Health Organization, the Council for International Organizations of Medical Sciences, and the International Association of Universities.) Palmer House, Chicago, Ill. August 30–September 4.
World Federation for Mental Health. Barcelona, Spain. August 30–Sept 5.

LaMOTTE CHEMICAL
Chestertown, Md. U. S. A.
Specialists in
Colorimetric Testing Methods
pH - Chlorine - Q.A.C. - etc.
Field kits for food tests - test papers - reagents - Blood and Urine Tests
Send for Illustrated catalog
Dept. PH

Directory of Health Service

BLACK & VEATCH

Consulting Engineers

Water — Sewage — Electricity — Industry

Reports, Designs, Supervision of Construction, Investigations, Valuation and Rates.

1500 Meadow Lake Parkway, Kansas City 14, Mo.

T P I

(Treponema Pallidum Immobilization Test)
Information on fees, and on collection and submission on specimens furnished upon request

THE DICKMAN LABORATORIES

ALBERT DICKMAN, Ph.D.
128 S. Seventeenth Street, P.O. Box 2091
Philadelphia 3, Pa.

ROY B. EVERSON

Water Treatment Service since 1900 for Swimming Pool Circulating Systems. Purification Systems as applied to Sewage Treatment and Water Works. A New System for Automatic Control.

215 W. HURON ST. CHICAGO 10, ILL.

NEWING LABORATORIES, Inc.

260 ISLIP AVE., ISLIP, N. Y.

SERVICE IN THE SANITARY SCIENCES

Industrial—Municipal—Private
Water—Sewage—Food—Air
Analyses—Research

Approved by N. Y. State Dept. of Health
BERNARD NEWMAN, Ch.E., Ph.D., Director

EMERSON VENABLE, P. E.

Chemist and Chemical Engineer

Atmospheric Pollution

Industrial Hygiene Fires & Explosions

6111 Fifth Ave., Pittsburgh 32, Pa.

PROFESSIONAL EXAMINATION SERVICE

A Personnel Administration Service in the Field of Public Health

Available to State and Local Health Departments and Merit Systems

Examinations Field Consultation

American Public Health Association, Inc.
1790 Broadway, New York 19, N. Y.

It can't get dirty!

● The factory-wrapped disposable OWD Ritespoon is the one spoon for public food service that provides total sanitation at all times, in hospitals, schools, soda fountains, industrial feeding, public refreshment places of all kinds.

Low cost permits unrestricted use. Specially printed sealed wrapper constitutes a potent merchandising force for drive-in, restaurant and fountain.

Made of selected hardwood. True shape of metal ware. 4 sizes, 3½", 5", 6", 7" and OWD Wrapped Ritefork 4¾". Also available not wrapped in sanitary bulk packaging. Available from wholesalers everywhere.

We will gladly send you samples. Please use your letterhead to request same.

O.W.D. Ritespoon

OVAL WOOD DISH CORPORATION

Tupper Lake, N.Y., Dept. H
The Oval Wood Dish Co. of Canada, Ltd.
Industrial Center No. 3, Quebec, P. Q.

NEW

BACTERIA SAMPLE CASE

Lightweight MILK SAMPLE SPECIMEN CASE

For Professional Milk Inspectors and Bulk Tank Truck Drivers

Insulation keeps milk samples cold 30 hours; weight full—12 lbs.; holds 24 vials in either size—15 ml. or #2 capsule; waterproof; measured about 9" x 11" x 11".

Price: 1-5 $28.95 ea. 6 or more $26.95 ea.
Quart of "Zer-O-Ice" included.

Mail coupon today.

R. W. HEAD CONTAINER COMPANY

P. O. BOX 333 ITHACA, NEW YORK

Please send me (check one):

☐ free folder ☐ sample case on approval

Vial size ☐ 15 ml. ☐ No. 2 capsule

Name _____

Title _____

Address _____

City _____ State _____

AMERICAN PUBLIC HEALTH ASSOCIATION, Inc.
GOVERNING COUNCIL

OFFICERS 1958–1959

President, Leona Baumgartner, M.D., New York, N. Y.
President-Elect, Malcolm H. Merrill, M.D., Berkeley, Calif.
Vice-President, Abraham Horwitz, M.D., Santiago, Chile
Vice-President, F. Burns Roth, M.D., Regina Sask., Canada
Vice-President, Estella Ford Warner, M.D., Albuquerque, N. M.
Treasurer, Charles Glen King, Ph.D., New York, N. Y.
Chairman of the Executive Board, John D. Porterfield, M.D., Washington, D. C.
Executive Director, Berwyn F. Mattison, M.D., New York, N. Y.

EXECUTIVE BOARD

Chairman, John D. Porterfield, M.D., Washington, D. C., (1959)
Leona Baumgartner, M.D., New York, N. Y. (President)
Charles Glen King, Ph.D., New York N. Y. (Treasurer)
John W. Knutson, D.D.S., Washington, D. C. (1960)
Malcolm H. Merrill, M.D., Berkeley, Calif. (President-Elect)
Marion W. Sheahan, R.N., New York, N. Y. (1960)
Charles E. Smith, M.D., Berkeley, Calif. (1959)
Wilson T. Sowder, M.D., Jacksonville, Fla. (1961)
Milton Terris, M.D., New Orleans, La. (1961)

ELECTIVE COUNCILORS

Terms Expiring 1959

Justin M. Andrews, Sc.D., Washington, D. C.
Margaret G. Arnstein, R.N., Washington, D. C.
Herbert M. Bosch, M.P.H., Minneapolis, Minn.
Sidney S. Chipman, M.D., Chapel Hill, N. C.
Dean A. Clark, M.D., Boston, Mass.
William J. Darby, M.D., Nashville, Tenn.
John H. Dingle, M.D., Cleveland, Ohio
Geoffrey Edsall, M.D., Washington, D. C.
William W. Frye, M.D., New Orleans, La.
Marion I. Murphy, R.N., Minneapolis, Minn.
Georgia B. Perkins, M.D., Denver, Colo.
John J. Phair, M.D., Cincinnati, Ohio
M. Allen Pond, M.P.H., Washington, D. C.
Howard J. Shaughnessy, Ph.D., Chicago, Ill.
Dorothy Wilson, Ed.D., New Haven, Conn.

Terms Expiring 1960

Gaylord W. Anderson, M.D., Minneapolis Minn.
Rodney R. Beard, M.D., San Francisco, Calif.
Jessie M. Bierman, M.D., Berkeley, Calif.
Leroy E. Burney, M.D., Washington, D. C.
John T. Fulton, D.D.S., Chapel Hill, N. C.
Fraser Harris, Ottawa, Ont., Canada
Herman E. Hilleboe, M.D., Albany, N. Y.
Edward G. McGavran, M.D., Chapel Hill, N. C.
Margaret F. Shackelford, Okla. City, Okla.
James H. Steele, D.V.M., Atlanta, Ga.
Patricia Walsh, R.N., Ann Arbor, Mich.
James Watt, M.D., Bethesda, Md.
George M. Wheatley, M.D., New York, N. Y.
Samuel M. Wishik, M.D., Pittsburgh, Pa.

Terms Expiring 1961

Carl L. Anderson, Dr.P.H., Corvallis, Ore.
Katherine Bain, M.D., Washington, D. C.
Herman G. Baity, Sc.D., Geneva, Switzerland
Charles F. Blankenship, M.D., San Francisco, Calif.
Anne Burns, R.N., Columbus, Ohio
Robert H. Felix, M.D., Bethesda, Md.
John P. Fox, M.D., New Orleans, La.
Vera E. Fry, Ed.D., Berkeley, Calif.
Ernest M. Gruenberg, M.D., New York, N. Y.
Paul A. Harper, M.D., Baltimore, Md.
Marjorie M. Heseltine, M.A., Washington, D. C.
Alexander D. Langmuir, M.D., Atlanta, Ga.
Richard K. C. Lee, M.D., Honolulu, Hawaii
Lucille Petry Leone, R.N., Washington, D. C.
Hugh R. McLaren, D.D.S., Ottawa, Ont., Canada
Beryl J. Roberts, Dr.P.H., Berkeley, Calif.
Morris Schaeffer, M.D., Montgomery, Ala.
Ray E. Trussell, M.D., New York, N. Y.

CHAIRMEN OF STANDING COMMITTEES

Committee on Affiliated Societies and Branches—Harold M. Erickson, M.D., Portland, Ore.
Committee on Constitution and By-Laws—David E. Price, M.D., Washington, D. C.
Committee on Eligibility—John J. Wright, M.D., Chapel Hill, N. C.
Committee on Evaluation and Standards—Bernard G. Greenberg, Ph.D., Chapel Hill, N. C.
Committee on Professional Education—Philip E. Blackerby, Jr., D.D.S., Battle Creek, Mich.
Committee on Public Policy and Legislation—Clarence W. Klassen, Springfield, Ill.
Committee on Research Policy—Thomas D. Dublin, M.D., Bethesda, Md.
Technical Development Board—Martha M. Eliot, M.D., Cambridge, Mass.

SECTION OFFICERS 1959

Dental Health

Chm., Donald J. Galagan, D.D.S., Washington, D. C.
Vice-Chm., Carl L. Sebelius, D.D.S., Nashville, Tenn.
Secy., David F. Striffler, D.D.S., Sante Fe, N. M.

Engineering and Sanitation Section

Chm., Clarence I. Sterling, Jr., Boston, Mass.
Vice-Chm., William C. Gibson, P.E., Ann Arbor, Mich.
Secy., James A. King, M.P.H., Bethesda, Md.

AMERICAN PUBLIC HEALTH ASSOCIATION, Inc.
GOVERNING COUNCIL—Cont.

Epidemiology

Chm., E. Gurney Clark, M.D., New York, N. Y.
Vice-Chm., Ross L. Gauld, M.D., Washington, D. C.
Secy., Arthur C. Hollister, Jr., M.D., Berkeley, Calif.

Food and Nutrition

Chm., Helen E. Walsh, Berkeley, Calif.
Vice-Chm., Franklin C. Bing, Ph.D., Chicago, Ill.
Secy., Dorothy M. Youland, Washington, D. C.

Health Officers

Chm., Robert E. Coker, Jr., M.D., Chapel Hill, N. C.
Vice-Chm., John J. Hanlon, M.D., Philadelphia, Pa.
Secy., Harald M. Graning, M.D., New York, N. Y.

Section Council:

Emil E. Palmquist, M.D., Berkeley, Calif.
Robert N. Barr, M.D., Minneapolis, Minn.
Daniel Bergsma, M.D., Trenton, N. J.
J. W. R. Norton, M.D., Raleigh, N. C.
Edwin H. Jorris, M.D., Madison, Wis.

Laboratory

Chm., F. Wellington Gilcreas, Gainesville, Fla.
Vice-Chm., Albert V. Hardy, M.D., Jacksonville, Fla.
Secy., Erwin Neter, M.D., Buffalo, N. Y.

Maternal and Child Health

Chm., Arthur J. Lesser, M.D., Washington, D. C.
Vice-Chm., Edward R. Schlesinger, M.D., Albany, N. Y.
Secy., Helen M. Wallace, M.D., Minneapolis, Minn.

Medical Care

Chm., George A. Silver, M.D., New York, N. Y.
Vice-Chm., James O'H. Brindle, Detroit, Mich.
Secy., Leslie A. Falk, M.D., Pittsburgh, Pa.

Mental Health

Chm., Joseph Zubin, Ph.D., New York, N. Y.
Vice-Chm., Henry C. Schumacher, M.D., Gainesville, Fla.
Secy., Alan D. Miller, M.D., Denver, Colo.

Occupational Health

Chm., Lewis J. Cralley, Ph.D., Cincinnati, Ohio
Vice-Chm., Seward Miller, M.D., Ann Arbor, Mich.
Secy., Mitchell R. Zavon, M.D., Cincinnati, Ohio

Public Health Education

Chm., Ralph H. Boatman, Jr., Ph.D., Chicago, Ill.
Vice-Chm., Betty W. Bond, Ph.D., Minneapolis, Minn.
Secy., M. Elizabeth Davis, Columbia, S. C.

Public Health Nursing

Chm., Agnes L. Fuller, R.N., New York, N. Y.
Vice-Chm., E. Alice Clark, R.N., Atlanta, Ga.
Secy., Jane B. Taylor, R.N., Indianapolis, Ind.

School Health

Chm., Howard S. Hoyman, Ed.D., Urbana, Ill.
Vice-Chm., John H. Shaw, Ed.D., Syracuse, N. Y.
Secy., Florence L. Fogle, R.N., Columbus, Ohio

Statistics

Chm., Mortimer Spiegelman, New York, N. Y.
Vice-Chm., Robert D. Grove, Ph.D., Arlington, Va.
Secy., F. M. Hemphill, Ph.D., Ann Arbor, Mich.

Representatives of Affiliated Societies and Branches

Alabama—Sidney J. Williams, M.D.
Arizona—J. Rex James
Arkansas—E. J. Easley, M.D.
California, Northern—James C. Malcolm, M.D.
California, Southern—Everett M. Stone, M.D.
Colorado—Roy L. Cleere, M.D.
Connecticut—Harold S. Barrett, M.D.
Cuba—Guillermo Lage, M.D.
Florida—Wilson T. Sowder, M.D.
Georgia—Dixon R. Olive, Jr., M.S.S.E.
Hawaii—Richard K. C. Lee, M.D.
Idaho—Terrell O. Carver, M.D.
Illinois—Benn J. Leland
Indiana—Samuel H. Hopper, Ph.D.
Iowa—Edmund G. Zimmerer, M.D.
Kansas—M. Leon Bauman, M.D.
Kentucky—Russell E. Teague, M.D.
Louisiana—Ben Freedman, M.D.
Maryland—Perry F. Prather, M.D.
Massachusetts—Margaret Drennan
Michigan—Isabelle Ryer
Minnesota—Abraham B. Rosenfield, M.D.
Mississippi—Margaret Rice
Missouri—Henry M. Hardwicke, M.D.
Montana—Paul R. Ensign, M.D.
Nebraska—Edwin D. Lyman, M.D.
New Mexico—Myrtle Greenfield
New York City—Nathaniel H. Cooper, M.D.
New York State—Meredith H. Thompson, Dr. Eng.
North Carolina—Everett H. Ellinwood, M.D.
North Dakota—Melvin E. Koons
Ohio—Albert L. Fishback
Oklahoma—John W. Shackelford, M.D.
Oregon—Clair V. Langton, Dr.P.H.
Pennsylvania—P. Walton Purdom, M.S.E.
Puerto Rico—Jose A. Hernandez-Matos, M.D.
South Carolina—G. S. T. Peeples, M.D.
South Dakota—Ben E. Diamond
Tennessee—Lloyd M. Graves, M.D.
Texas—Joseph N. Murphy, Jr.
Utah—Grace C. Nason
Virginia—David R. Wallace, D.D.S.
Washington State—Bernard Bucove, M.D.
West Virginia—Bruce H. Pollock, M.D.
Wisconsin—Charles K. Kincaid, M.D.
Middle States—A. C. Offutt, M. D.
Southern Branch—Guy V. Rice, M.D.
Western Branch—Lenor S. Goerke, M.D.

DIRECTORY OF INDUSTRIAL EXHIBITS

87th Annual Meeting

Atlantic City, New Jersey *Convention Hall* *October 19-22, 1959*

ADVANCED INSTRUMENTS, INC., Newton Highlands, Mass., Booth 403.

AETNA LIFE AFFILIATED COMPANIES, Information and Education Dept., Hartford, Conn., Booth 445.

AMERICAN CAN CO., New York, N. Y., Booths 311 and 313.

AMERICAN CYANAMID CO., Surgical Products Div., Danbury, Conn., Booth 328.

AMERICAN EDELSTAAL, INC., New York, N. Y., Booths 331 and 333.

AMERICAN JOURNAL OF NURSING CO., New York, N. Y., Booth 414.

AMERICAN MEDICAL ASSN., Chicago, Ill., Booth 236.

AMERICAN STERILIZER CO., Erie, Pa., Booth 208.

THE AMERICAN TOBACCO CO., Research and Development Dept., Richmond, Va., Booths 304 and 306.

ASSOCIATION CONVENTIONS EXHIBITS, New York, N. Y., Booth 216.

BECTON, DICKINSON AND CO., Baltimore Biological Laboratory Division, Baltimore, Md., Booth 433.

BELLCO GLASS, INC., Vineland, N. J., Booth 533.

BELTONE HEARING AID CO., Chicago, Ill., Booth 416.

GEORGE A. BREON & CO., New York, N. Y., Booth 312.

CARNATION CO., Los Angeles, Calif., Booth 351.

CASE LABORATORIES, INC., Chicago, Ill., Booth 335.

CEREAL INSTITUTE, INC., Chicago, Ill., Booth 204.

CHILEAN IODINE EDUCATIONAL BUREAU, INC., New York, N. Y., Booths 432 and 434.

CIBA PHARMACEUTICAL PRODUCTS INC., Summit, N. J., Booth 446.

THE COCA-COLA CO., Atlanta, Ga., Booth 447.

THE CUNO ENGINEERING CORP., Meriden, Conn., Booth 452.

DIFCO LABORATORIES INC., Detroit, Mich., Booth 542.

THE DIVERSEY CORP., Chicago, Ill., Booths 415 and 417.

E. I. DU PONT DE NEMOURS AND CO., INC., Wilmington, Del., Booths 322 and 324.

ECONOMICS LABORATORY, INC., New York, N. Y., Booth 407.

ENCYCLOPAEDIA BRITANNICA, Philadelphia, Pa., Booth 327.

ENGELHARD INDUSTRIES, INC., Hanovia Lamp Div., Newark, N. J., Booth 547.

EVERPURE, INC., Chicago, Ill., Booth 502.

FORD DIVISION—FORD MOTOR CO., Dearborn, Mich., Booths 232 and 234.

GENERAL ELECTRIC CO., Appliance Div., Louisville, Ky., Booth 501.

GENERAL IONICS CORP., Pittsburgh, Pa., Booths 516 and 518.

GREAT BOOKS OF THE WESTERN WORLD, Chicago, Ill., Booth 552.

HACH CHEMICAL CO., Ames, Ia., Booth 425.

HARTZ MOUNTAIN PRODUCTS CORP., New York, N. Y., Booth 418.

HEALTH INSURANCE COUNCIL, New York, N. Y., Booth 538.

HELLIGE, INC., Garden City, N. Y., Booth 334.

HEUBLEIN, INC., Food Div., Burlington, Vt., Booth 326.

THE HOBART MANUFACTURING CO., Troy, Ohio, Booth 411.

JOHN HANCOCK MUTUAL LIFE INSURANCE CO., Boston, Mass., Booth 544.

KIMBERLY-CLARK CORP., Neenah, Wis., Booth 316.

KIMBLE GLASS CO., Toledo, Ohio, Booth 346.

LICENSED BEVERAGE INDUSTRIES, INC., New York, N. Y., Booth 317.

DIRECTORY OF INDUSTRIAL EXHIBITS (cont.)

87th Annual Meeting

Atlantic City, New Jersey *Convention Hall* *October 19-22, 1959*

THE LORVIC CORP., St. Louis, Mo., Booth 325.

THE MACMILLAN CO., New York, N. Y., Booth 301.

MAICO ELECTRONICS, INC., Minneapolis, Minn., Booth 511.

MEDICAL CASE HISTORY BUREAU, INFO-DEX REGISTER SYSTEM, New York, N. Y., Booth 308.

MEDICAL COACHES INC., Oneonta, N. Y., Booth 337.

MERCK SHARP AND DOHME, Philadelphia, Pa., Booth 402.

MILLIPORE FILTER CORP., Bedford, Mass., Booth 343.

THE C. V. MOSBY CO., St. Louis, Mo., Booth 332.

NATIONAL ANILINE DIVISION, ALLIED CHEMICAL CORP., New York, N. Y., Booth 408.

NATIONAL DAIRY COUNCIL, Chicago, Ill., Booth 323.

NATIONAL LIVE STOCK AND MEAT BOARD, Chicago, Ill., Booth 307.

HERMIEN NUSBAUM AND ASSOCIATES, Chicago, Ill., Booth 345.

OVAL WOOD DISH CORP., Tupper Lake, N. Y., Booth 536.

PARKE, DAVIS AND COMPANY, Detroit, Mich., Booth 545.

PEPPERIDGE FARM INC., Norwalk, Conn., Booth 427.

PEPSI-COLA CO., New York, N. Y., Booths 506 and 508.

PERSONAL PRODUCTS CORP., Milltown, N. J., Booth 321.

PROCTER AND GAMBLE CO., Cincinnati, Ohio, Booth 413.

PROFESSIONAL TAPE CO., INC., Riverside, Ill., Booth 431.

PUBLIC HEALTH COMMITTEE OF THE PAPER CUP AND CONTAINER INSTITUTE, INC., New York, N. Y., Booths 526 and 528.

THE PYRAMID RUBBER CO., Ravenna, Ohio, Booth 303.

RICH AND CO., INC., Houston, Texas, Booth 224.

ROSS LABORATORIES, Columbus, Ohio, Booth 404.

SAROLE, INC., Linden, N. J., Booth 302.

W. B. SAUNDERS CO., Philadelphia, Pa., Booth 401.

SCHOOL HEALTH SUPPLY CO., Forest Park, Ill., Booth 202.

SEALRIGHT CO., INC., Fulton, N. Y., Booths 515 and 517.

THE SEVEN-UP CO., St. Louis, Mo., Booths 421 and 423.

SONOTONE CORP., Elmsford, N. Y., Booth 527.

STERWIN CHEMICALS INC., New York, N. Y., Booth 532.

TALB INDUSTRIES, INC., Philadelphia, Pa., Booth 341.

TAMPAX INC., New York, N. Y., Booth 412.

TRAVENOL LABORATORIES, INC., Morton Grove, Ill., Booth 548.

UNITED STATES BREWERS FOUNDATION, New York, N. Y., Booth 212.

WARING PRODUCTS CORP., New York, N. Y., Booth 426.

WEST CHEMICAL PRODUCTS, INC., Long Island City, N. Y., Booth 305.

WYETH LABORATORIES, Philadelphia, Pa., Booth 531.

ZENITH RADIO CORP., Chicago, Ill., Booth 422.

PUBLICATIONS OF THE APHA (1790 Broadway, New York 19, N. Y.)

American Journal of Public Health and the Nation's Health:
- Subscription (USA) $12.00
- Foreign $13.00
- Single copies $1.25

APHA Year Book $1.50

An Appraisal Method for Measuring the Quality of Housing—A Yardstick for Health Officers, Housing Officials and Planners:
- Part I. Nature and Uses of the Method. 1945. 71 pp. $1.00
- Part II. Appraisal of Dwelling Conditions. Vol. A—Director's Manual. $3.00. Vol. B—Field Procedures. $2.00. Vol. C—Office Procedures. $2.00. 1946; or three for $6.00
- Part III. Anpraisal of Neighborhood Environment. 1950. 132 pp. $3.00

Baker's Devonshire Colic. 1767. Facsimile Delta Omega ed., 1958. 74 pp. $5.00

Basic Principles of Healthful Housing. 2nd ed. reprinted 1950. 34 pp. $1.00

Care of Laboratory Animals. 1954. 32 pp. ..... .75

Control of Communicable Diseases in Man. 8th ed. 1955. 219 pp. ..... .60

Diagnostic Procedures and Reagents. Technics for the Laboratory Diagnosis and Control of the Communicable Diseases. 3rd ed. 1950. 589 pp. $6.00

Diagnostic Procedures for Virus and Rickettsial Diseases. 2nd ed. 1956. 578 pp. $7.50

Directory of Public Health Statisticians. 6th ed. 1958. 58 pp. $1.50
Special price to members on prepaid orders only. $1.00

Evaluation Schedule. For use in the study and appraisal of community health programs ..... .70

General Medical Care Programs in Local Health Departments. 1951. 129 pp. $1.00

Guide to a Community Health Study. Revised 1955. 64 pp. $1.00

Guides to Services for Handicapped Children:
- Cerebral Palsy—1955. 108 pp. $1.50
- Cleft Lip and Cleft Palate—1955. 84 pp. $1.50
- Dentofacial Handicaps—1955. 68 pp. $1.50
- Epilepsy—1958. 124 pp. $1.50
- Handicapped Children—1955. 150 pp. $1.50
- Hearing Impairment—1956. 124 pp. $1.50
- Vision and Eye Problems—1956. 112 pp. $1.50

Health Supervision of Young Children. A Guide for Practicing Physicians and Child Health Conference Personnel.
- Paper edition—1955. 180 pp. $2.00
- Cloth bound edition $3.00

Housing an Aging Population. 1953. 92 pp. $1.00

Methods for Determining Lead in Air and in Biological Materials. 2nd ed. 1955. 69 pp. ... $1.25

Nutrition Practices: A Guide for Public Health Administrators. 72 pp. $1.00

Occupational Lead Exposure and Lead Poisoning. 1943. 67 pp. ..... .50

Principles for Healthful Rural Housing. 1st ed. 1957. 29 pp. $1.00

Proposed Housing Ordinance. 1952. 24 pp. $1.00

Public Exposure to Ionizing Radiation. What Public Health Personnel Needs to Know. 1958. 55 pp. $1.35

Public Health and Hospitals in the St. Louis Area—A Mid-Century Appraisal. 1957. 414 pp. ... $4.50

Public Health Career Pamphlets:
- Public Health—A Career with a Future. Revised edition. 1954. ..... .25

Radiological Health Practice. A Guide for Public Health Administrators. 1959. 20 pp. ..... .65

Recommended Methods for the Microbiological Examination of Foods. 1958. 207 pp. $4.50

Selected Papers of Joseph W. Mountin, M.D. 1956. 336 pp. $5.00

Shattuck Report, The. Report of the Sanitary Commission of Massachusetts: 1850. 321 pp. .. $4.50

Standard Methods for the Examination of Dairy Products. 10th ed. 1953. 345 pp. $5.50
- Microbiological Examination of Milk and Cream: Chapter 2 only. 61 pp. ..... .75
- Photographic Sediment Charts $1.75

Standard Methods for the Examination of Water, Sewage and Industrial Wastes. 10th ed. 1955. 522 pp. $7.50
Special price to members of APHA, AWWA, and FSIWA on prepaid orders only for a single copy. $6.50

Standards for Healthful Housing:
- Planning the Home for Occupancy. 1950. 56 pp. $2.00
- Construction and Equipment of the Home. 1951. 77 pp. $2.00

Swimming Pools and Other Public Bathing Places. Recommended Practice for Design, Equipment and Operation. 10th ed. 1957. 60 pp. $1.00

35 Year Index of the American Journal of Public Health. Years 1911 to 1945. 340 pp. Buckram ed. $7.00. Paper ed. $3.75

Order from the Book Service — Advance Payment Is Requested

REPRINTS FROM THE AMERICAN JOURNAL OF PUBLIC HEALTH

Bacterial Cleanability of Various Types of Eating Surfaces. February, 1953. 12 pp. ..... .25

Bookshelf on Epidemiology and Evaluation, The Medical Officer's. April, 1957. 16 pp. ..... .35

Bookshelf on Foods and Nutrition. April, 1955. 12 pp. ..... .25

Bookshelf on International Health. April, 1958. 12 pp. ..... .25

Bookshelf on the Social Sciences and Public Health. April, 1959. 14 pp. ..... .35

Certain Aspects of the Microbiology of Frozen Concentrated Orange Juice. June, 1956. 8 pp. .10

Creative Health and the Principle of Habeas Mentum. February, 1956. 12 pp. ..... .25

Driver Behavior and Accidents. May, 1957. 8 pp. .10

Financing Medical Care for the Aged. February, 1959. 26 pp. ..... .50

Givers' Dilemma. Editorial. October, 1954. 4 pp. Free

Lemuel Shattuck—Still a Prophet. February, 1949. 27 pp. ..... .25

The Local Health Department—Services and Responsibilities. An official statement of the American Public Health Association. March, 1951. 8 pp. ..... .10

On the Use of Sampling in the Field of Public Health. June, 1954. 24 pp. ..... .40

Poultry Inspection. Official Statement of APHA. November, 1957. 12 pp. ..... .50

State Health Department—Services and Responsibilities. February, 1954. 20 pp. ..... .35

Suggested Home Accident Prevention Activities for Health Departments. May, 1956. 8 pp. ... .10

Tax-Supported Health and Welfare Services. January, 1957. 8 pp. ..... .15

Tax-Supported Medical Care for the Needy. October, 1952. 20 pp. ..... .10

Order from the Book Service — Advance Payment Is Requested

Preserve your JOURNALS

With a *Jesse Jones* Volume File

Specially designed and produced for the American Journal of Public Health, this file will keep one volume, or 12 issues, clean, orderly and readily accessible. Picture this distinctive, sturdy Volume File on your book shelf. Its rich red and green Kiver cover looks and feels like leather, and the 16-carat gold leaf hot-embossed lettering makes it a fit companion for your finest bindings.

The Volume File is reasonably priced, in spite of its costly appearance. It is sent postpaid (except in Canada and in foreign countries) carefully packed, for $2.50 each. Most members will find it more convenient and economical to order 3 for $7.00 or 6 for $13.00. Satisfaction guaranteed. For prompt shipment, order direct from the:

American Public Health Association
1790 Broadway, New York 19, N. Y.

Directory of Public Health Statisticians

Sixth Edition (1958)

This edition lists the names of 1,322 public health statisticians and, in addition, gives job titles, degrees, agency or company affiliation and addresses.

It is a book made to be useful to not only the statistician, but also to agencies and health departments. Get your copy now through the APHA Book Service. For the small cost of $1.00 a copy to Members on prepaid orders, and $1.50 a copy to nonmembers, you may have the latest "who's who" of the statisticians in public health.

AMERICAN PUBLIC HEALTH ASSOCIATION, INC.

1790 BROADWAY NEW YORK 19, N. Y.

AMERICAN PUBLIC HEALTH ASSOCIATION, Inc.
1790 Broadway **New York 19, N. Y.**

APPLICATION FOR MEMBERSHIP

(Please type or print)

NAME .....

MAILING ADDRESS ..... (street) (city) (zone) (state)

PRESENT POSITION ..... (title) (organization)

BUSINESS ADDRESS ..... (street) (city) (zone) (state)

PRIOR EXPERIENCE ..... (title) (organization) (city and state) (dates)

.....

.....

PLACE AND DATE OF BIRTH .....

EDUCATION (schools, dates, degrees if any) .....

.....

.....

.....

PROFESSIONAL SOCIETY MEMBERSHIPS .....

.....

Please complete application on reverse side.

The purity, the wholesomeness, the quality of Coca-Cola as refreshment has helped make Coke the best-loved sparkling drink in all the world.
DRINK
Coca-Cola
REG. U.S. PAT. OFF.

SIGN OF GOOD TASTE

(Continued from previous page)

SECTION AFFILIATION DESIRED (choose only one)

.....Health Officers	.....Food and Nutrition	.....School Health
.....Laboratory	.....Maternal and Child Health	.....Dental Health
.....Statistics	.....Public Health Education	.....Medical Care
.....Engineering and Sanitation	.....Public Health Nursing	.....Mental Health
.....Occupational Health	.....Epidemiology	.....Unaffiliated

ENDORSER: The endorser of this application must be a Member or Fellow of the American Public Health Association. If you cannot obtain the actual signature, print the name and address so that the Administrative Office may procure it for you.

.....
(signature) (address)

ANNUAL DUES: United States $12.00; elsewhere $13.00 to cover postage. The dues cover use of the services maintained by the Association and monthly receipt of the American Journal of Public Health.

The membership year is January through December. Members joining during the first six months of the year will receive the Journal from January through December. Members joining after July 1 will receive the Journal beginning with July; such applicants may pay one year's dues covering the period July through June, or one-and-a-half year's dues, thus adjusting dues to the membership calendar year.

Dues must be received before applications are reviewed by the Committee on Eligibility.

A remittance for $..... is enclosed. Send bill to.....

DATE .....SIGNATURE .....

SPECIAL MESSAGE ON ENVIRONMENTAL CONTROL OF HOSPITAL STAPH

Your work with hospitals in controlling Staph and preventing its spread into the community[1] is undoubtedly increasing rapidly.

May we help in one of these ways?

1) By supplying you with supplementary technical information for use with the hospital Infection Committee in analyzing the problem.

2) By sharing with you the experience of other hospitals in identifying trouble spots and establishing tested methods for stopping outbreaks and reducing incidence.

3) By providing practical methods for increased and more effective disinfection procedures in line with your recommendations - methods which are so easy to follow they become hospital routine with a minimum of overseeing.

The proven effectiveness of our phenolic disinfectants against antibiotic-resistant Staph strains recommends any one of them for your consideration. Amphyl®, O-syl®, Lysol® disinfectants and Tergisyl™ detergent-disinfectant have individual characteristics to aid you in selecting the disinfectant most suitable for your purposes. All are broad spectrum - killing pathogenic organisms including Staphylococci, fungi and TB bacilli.

Please call on us for any of the above help. Also, our technical staff will be glad to work with you. Product literature includes bacteriological data and tested procedures. Literature and samples are available on request.

Professional Division
LEHN & FINK PRODUCTS CORPORATION
445 Park Avenue, New York 22, N.Y.

1. Proceedings National Conference-Hospital-Acquired Staphylococcal Disease, September, 1958, pages 3-10.

©Lehn & Fink Products Corporation 1958

DIFCO

A S T O

Difco reagents for the diagnosis of

Group A Streptococcal Infections

- RHEUMATIC FEVER
- GLOMERULONEPHRITIS

ANTISTREPTOLYSIN *O* TITERS (ASTO) and their relation to pathological conditions in Group A streptococcal infections have established the importance of this determination as a routine clinical test.

Bacto-Streptolysin O Reagent- a dehydrated, standardized and stable reagent requiring only rehydration with distilled water. Antistreptolysin *O* titers have been impractical for routine diagnosis because of the difficulties in preparing the reagent. Bacto-Streptolysin *O* Reagent is a standardized preparation permitting the routine performance of this diagnostic test in all clinical laboratories.

Bacto-ASTO Standard- an antiserum titered in Todd units for use as a control in the determination of antistreptolysin *O* titers.

Descriptive literature sent upon request

DIFCO LABORATORIES

DETROIT 1, MICHIGAN